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Industrial FINISHING

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JUNE, 1949
Vol. XXV, No. 8

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...ished monthly to finishing ... and paint shop foremen, ...uction superintendents, ...ists, purchasing agents and ...ny executives of metal-..., woodworking and ...ness industrial plants ...e production planning and ...ing are major operations in ... and products manufactured.

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Acceptance under Section 34.64, P. L. & R., authorized.

25 TWENTY-FIFTH YEAR OF PUBLICATION

Video Sales. It is interesting to note that based upon a comprehensive survey by Sales Research of Sylvania Electric Products, Inc., it is estimated that 1,580,000 television receivers will be sold this year. If selling techniques are improved there is an excellent chance that sales will pass the two million mark. Production estimates for this year made by industry leaders, run from two to three million sets.

Several factors influence the sale of television receivers. Areas where telecasting facilities are not available, confusion and uncertaintly regarding pricing, screen sizes and frequencies —all have their effect. These are merely "growing pains", and they will be eliminated.

* * *

Formula For Progress. Four lines written by Rudyard Kipling many years ago contain the formula for all progress. They were not written for presidents or managers or foremen or laborers, but for all men regardless of their job. Here they are:

I keep six honest serving men
(They taught me all I knew);
Their names are What and Why and When
And How and Where and Who.

* * *

Training Sales & Service Men. Oakite Products, Inc. (specialized industrial cleaning materials) is one of the several companies that provides a comprehensive training program for sales and service employees. The course includes laboratory and manufacturing work as well as field service, all under competent instructors. This excellent type of training is being used by many large firms for the benefit of the company, the employee and the firm's customers.

* * *

Save Eye Sight. Over 2,000,000 workers—10% of the nation's industrial workers—are now receiving the benefits of new programs installed by leading manufacturing plants to improve the safety and sight of their employees.

An analysis of reports received from these plants indicates that, on an average, one out of every three factory workers needed eyesight correction and that the adoption of recently conceived industrial safety and visual efficiency programs has resulted in reduced eye and other accidents and the saving of many thousands of dollars in medical and compensation costs.

* * *

Economy in Production will be the central theme of the 31st National Metal Congress & Exposition when the annual event takes place in Cleveland's Public Auditorium, October 17th through October 21st, 1949.

This will be the first post-war program to concentrate national attention on the greater efficiency of modern industrial equipment by actual demonstrations of what the equipment

(Continued on page 6)

Dolan's
LEATHER FINISHES

Satisfied users of our latest developments in Leather Finishes include many of the top names in Nationally advertised Novelty Furniture.

DOLAN'S LEATHER FINISHES will not crack, craze or lift regardless of how the Leather is folded, creased or handled. They will permit of stretching, tooling, glueing, etc.

#1375 LEATHER LACQUER
LEATHER SHADING STAINS
PADDING STAINS

"From the start,—consider the *FINISH*"

V. J. DOLAN & COMPANY, Inc.

Manufacturers of "Unquestionable Quality"
INDUSTRIAL FINISHES
1830 N. Laramie Ave. Chicago 39, Ill.

Tack-Off Dust, Grit and Lint with a "DUST-ALL" Tack Rag before finishing

Specks of dust, grit and lint accumulating on surfaces to be finished, cause blisters and blemishes when painted over. For only a few pennies per job, your finishing department provided with "Dust-All" Tack Rags to wipe off, collect and hold this objectionable matter, can be assured of fine finish jobs.

Ask for further information on "Dust-All" Tack Rags for industrial use and for a sample.

Be sure to get the Tack Rag that comes in the Red Checkered Bag.

HARDING *Manufacturing Co.*
10620 Gratiot Ave., Detroit 13, Mich.

Is this YOUR plant?

NON-INFLAMMABLE*
Detroit Handy "TAC"® Rags might have saved it!

Detroit Handy '*Tac*' Rags now have an added EXCLUSIVE new feature—they are non-inflammable.* They quickly remove all particles of lint, dust and sand preparatory to lacquering or enameling, and insure a smooth, perfect mirror-like finish. Detroit Handy '*Tac*' Rags remain soft and tacky indefinitely.

Available from your local paint dealer or write for name of nearest supplier.

The Standard of Quality for 15 Years

DETRO MFG. & SALES CO., INC.

3429 Wesley St., Culver City, California

*An Exclusive Feature, Pat. Pending.

will do to effect savings and thus reduce the unit cost of the product or part it helps to make. Dramatic principles of cost cutting will take the form of "know-how" during the special technical and educational sessions of the Metal Congress; the "show-how" of production economy will be graphically demonstrated by exhibitors who, with either materials, equipment or processes, will illustrate the proper application and most efficient operation of their products as a contribution to saving in production.

* * *

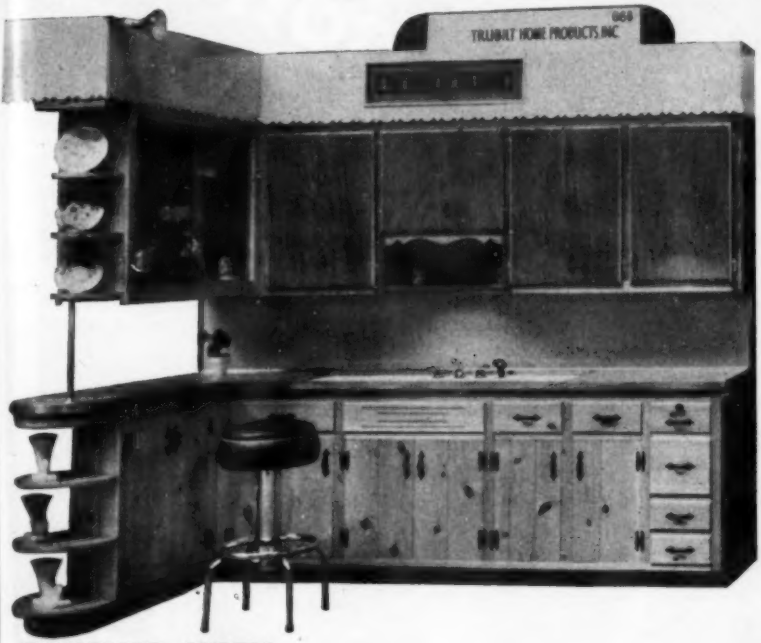
Improved Wire Brush. A completely new and revolutionary rotary wire brush, with bristles imbedded or locked in rubber centers, has appeared on the market. The Rubberlokt core eliminates localization of bristle fatigue by allowing the wire bristles to flex over a gradual arc of their entire length. Thus the bristles are not prematurely broken and thrown out, keeping the brush in balance for its full life. Furthermore, they may be worn down to the rubber flange.

* * *

Safety Suggestions. If we can make everyone in the plant a part-time safety inspector, we will be approaching the ideal safety program. Unfortunately, no one has yet devised a method of achieving 100% cooperation. A safety suggestion plan, properly administered, provides facilities whereby everyone in the plant can take an active part in the safety program.

Fundamentally, a safety suggestion system is merely an organized plan for stimulating and obtaining from employees those ideas which will make the plant safer. Creative ideas, properly utilized, not only benefit a plant by reducing hazards and unsafe practices but are helpful in stimulating

(Continued on page 100)



FINISHED WITH KIRCO SHELLAC, SEALER AND CLEAR LACQUER

At the Greater Paterson Home Show the Trubilt Home Products, Inc. of East Paterson, N. J., well known manufacturers of kitchen cabinets, displayed the cabinet shown above—the upper part being birch and the lower part knotty pine.

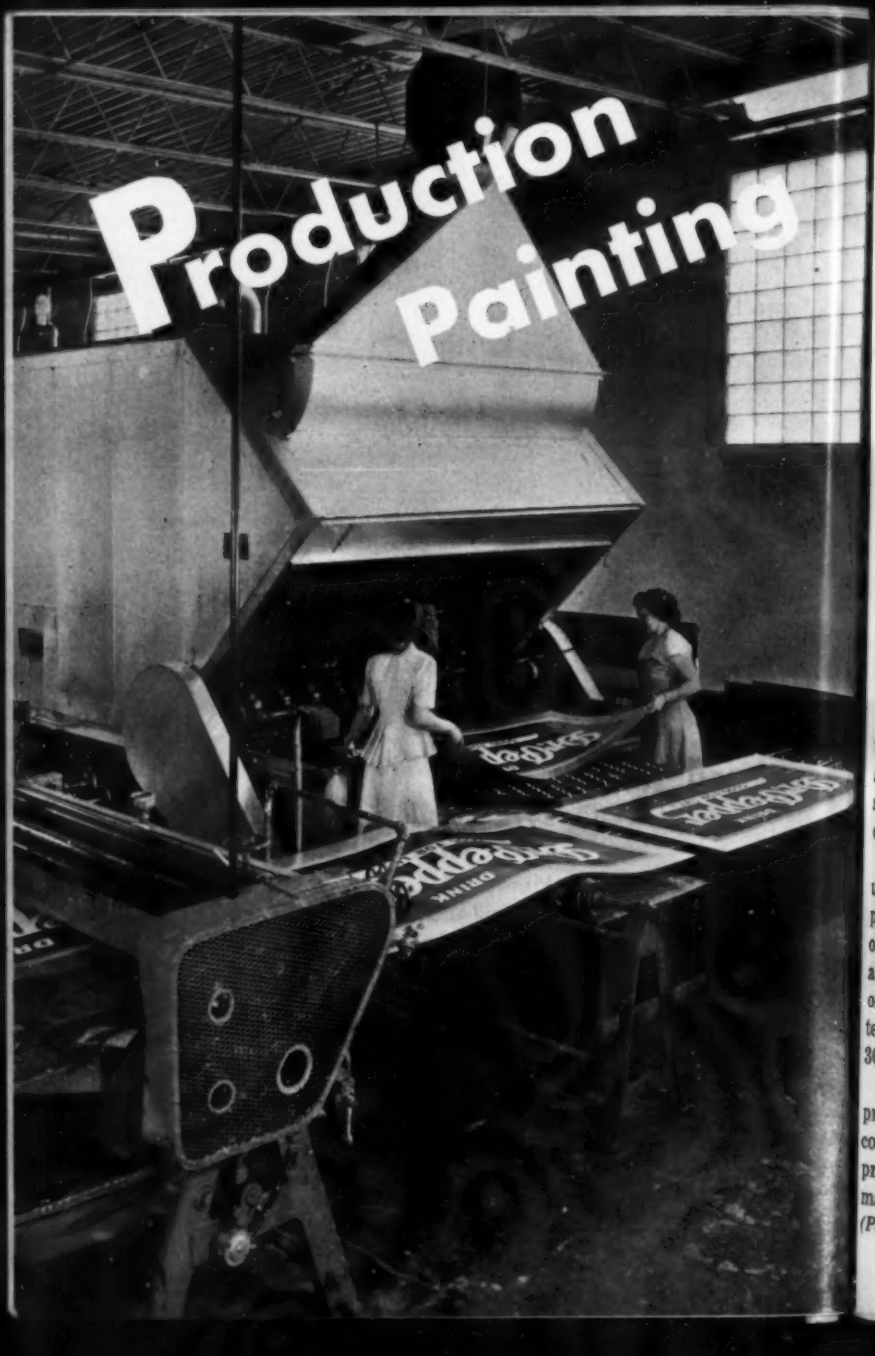
KIRCO shellac and sealer were used and then sanded within an hour. The final coat was KIRCO Clear Lacquer, providing a gleaming, glass like surface of beautiful texture. Finished sample panels will be sent on request.

KIRCO

KIRCO Modern Coatings are delivering trouble free performance to prominent manufacturers of metal, wood, plastic and glass products.

Kirker CHEMICAL COMPANY

ONE EAST ELEVENTH STREET • PATERSON 4, NEW JERSEY



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Of Metal Signs

By Kenton S. Donaldson
Plant Manager of
Donaldson Art Sign Co.

THERE are three distinct methods of finishing metal signs. Lithographing and gum printing have long been used to make signs, and they will probably continue to be used for some time. However, for real permanence and durability outside and in all climates, I believe there is no substitute for the screen processed sign. This is understandable when you realize that by this method of application it is possible to produce a film thickness of 5 to 7 mils.

Regardless of how the sign will be produced, all of the metal used for signs follows the same course of procedure up to a certain point. The metal sheets come in clean and free from grease and oil. The sheets are cut to size, the corners are rounded and holes are punched for hanging. Then one side is given a fairly thin coat of aluminum synthetic enamel, applied by a roller coater. This protective coating on the back of the sign is baked for 22 minutes at 300° F.

The face side of the sign is roller-coated with zinc chromate primer which is baked for 22 minutes at 250° F. Then a base color coat—an alkyd-resin-base material—is rolled on the zinc chromate primed surface. At least 90% of all base colors are white; others may be any color. The base color is baked for 22 minutes at 250° F.

(Page 25) *(Continued on page 27)*

National Air Sanders

MODEL 300

Weighs 5½ lbs.

RECIPROCATING ACTION

For a perfect finish without swirls, circles, or gouges, use the straight-line, Model 300 National Air Sander. It will save time in filling, sealing and rubbing. Makes 2000 ¾"-strokes per pad per minute . . . requires 60 to 100 lbs. air pressure . . . has up to 50 sq. in. of abrasive area.

MODEL 400

Weighs 4 lbs.

ORBITAL ACTION

Even on small, narrow, and irregular pieces, the Model 400 will save time and energy and give you a much better finish. It is fast (up to 6000 r.p.m.) . . . has an abrasive area of 25 sq. in. . . . and is powerful and vibrationless. Write the factory for further details today.

Powerful . . . Vibrationless . . . Light-Weight

NATIONAL AIR SANDER, INC., Rockford, Ill.

How Signs Are Screen Printed

At this point the coated sheets are distributed to various departments to receive the required art work. Some are gum printed; others are lithographed; and still others are screen printed. Some of the silk screen work is fairly simple, consisting of from one to three colors on the base color. For this type of work ordinary stencils are cut and adhered to the framed silk, one screen for each color.

The application of silk-screen colors to metal is somewhat different from their use on paper and paper products. It must be remembered that there is absolutely no absorption of the paint material by the coated metal surface. Colors may be thinned slightly for ordinary screen work, but this thinning must be done with extreme care.

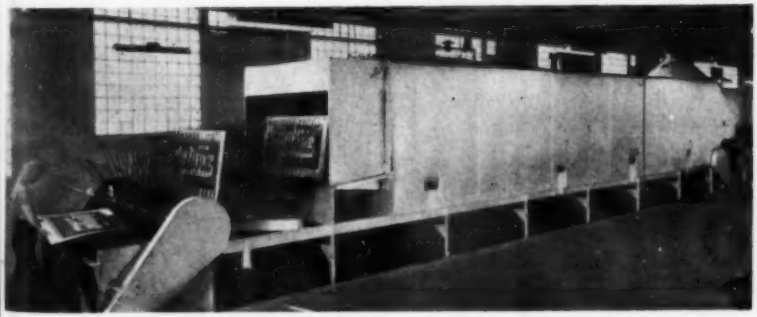
Other signs require 4-color process work applied through halftone screens. We make these photographic stencils on carbon tissue. For this type of work the translucent colors are used as they come from the containers—that is with no thinner added. Each screened-on color is dried in the metal decorating oven for 22 minutes at 250° F.

Clear Top Coat Protects Color Work

After the final color has been applied, the sheet metal signs pass through the roller coater for a protective coat of clear alkyd-resin-base material which is baked for the same period and at the same temperature as the color coats. Upon leaving the oven the signs are ready either for packing or for embossing.

Embossed and Debossed Sheet Metal Signs

Art signs are made of steel ranging in thickness from 20 to 32-gauge. Some signs require embossing; that is the use of raised letters or designs on the face of the sign. Others call for debossing, or the use of depressed or sunken letters or designs on the face of the sign. For fairly thin gauge metal and comparatively short runs, tem-



Side view of complete oven. Outfeed end appears at left; infeed end is at extreme right.

pered hardboard dies, male and female, are used for both embossing and debossing. For heavier gauge metal and long runs, steel dies are used.

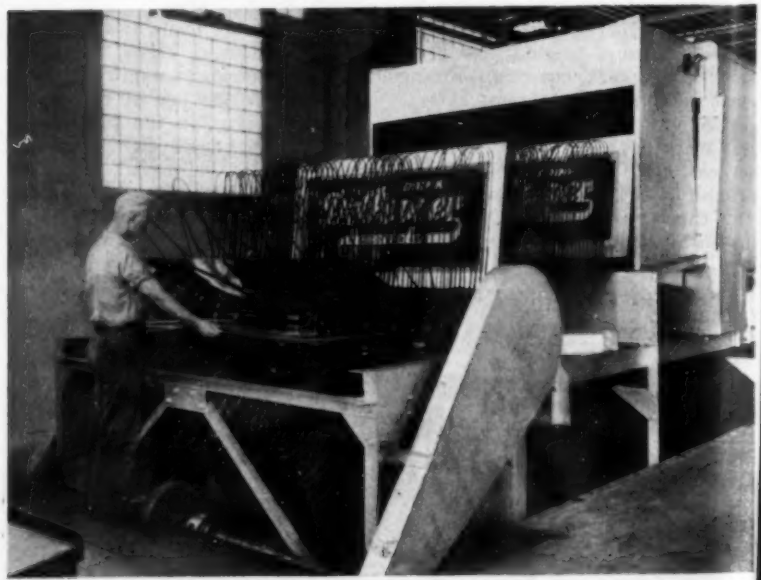
All signs are packed in cartons for shipment. A slip sheet of rubberized paper is placed over each sign so that the signs will not stick together, regardless of weather conditions or where they are shipped.

Modern Bake Ovens Aid Production

Some of you may be wondering how it is possible to obtain mass production of signs when there are so many operations and so many baking periods. It would be impossible if it were not for modern equipment.

We have three metal decorating ovens, the largest of which will take a sheet 4x8-ft. On this particular unit, the roller coater is placed on the side of the infeed end, and coated sheets are carried to loading position by conveyor so that operators can hand feed them into the oven. With this arrangement, portable silk-screen tables can be conveniently placed so that screened signs may be fed directly into the oven.

This oven will hold 350 full-size signs, or it may be used for smaller



Outfeed end of the baking oven. Painted sheet metal signs are emerging from the cooling zone. Notice that the operator does not have to wear gloves to handle the metal signs.

SAVE *Time* AND *Labor* WITH

PRINTEX VARNISH

Combines the working properties of Lacquer and Varnish

Now you can have, in one product, the important working properties of both a lacquer and a varnish. Printex is the result of long and exacting research at the Reliance laboratories . . . proved in large scale production for more than a year.

Look at these outstanding Printex features. We'll gladly send you additional information without obligation.

Varnish solids—lacquer speed.

One coat has build-up of two lacquer coats.

Sets out of dust in 15 minutes.

Air dries to rub or pack in 16 hours.

Force dries in 1½ hours at 125°-140° F.

Can be rubbed as soon as cool.

Clear, transparent—no blushing or blooming.

Withstands pressure packing—2 lbs. to square inch.

Water and alcohol resistant.

Sprays easily, smoothly and quickly.

Does not settle in package.

Supplied in gloss or dull lusters.

For additional information address
4732 Crittenden Dr., Louisville, Ky.

Rely on Reliance

RELIANCE VARNISH CO.
INCORPORATED
Louisville, Ky. • Chicago, Ill. • Brooklyn, N. Y.

signs in which case there will be 700 signs in the oven from end to end. The conveyor operates at a speed of 11-wickets per minute.

Another unit consists of a metal decorating oven, roller coater and lithographing press, all synchronized mith the conveyor. This unit will accommodate sizes up to 24x36-in. When it is used for lithographed work, signs are carried through the roller coater, with its rolls raised, and on into the oven. This setup may also be used for roller coating, in which case the signs are fed automatically from the hopper feed of the press (which is not operating) into the roller coater and then into the oven.

The third unit—an oven and roller coater—will take signs up to 30x48-in., with a capacity of 1800 per hour. This roller coater is equipped with synchronized feed and elevator table. The advantage of the synchronized feed is that it permits the unit to be operated at full capacity. A foot switch, controlled by the operator, actuates a mechanism which raises or lowers the table to maintain a convenient height at all times.

Six batch-type ovens are used for small runs and special jobs that require different baking periods and temperatures.

Zones of Heat in Baking Oven

It is the gas-fired metal decorating ovens that make mass production possible. The first two comparatively short zones are used to bring the signs as well as the wickets up to full baking temperature. The last zone is strictly a cooling zone. Large capacity fans cool both the signs and the wickets. They blow heated air into the baking zones of the oven where it is picked up by recirculating fans to be carried forward through the signs to replace the fume-laden air which is exhausted from the first zone. Air is blown in a direction opposite to conveyor travel.

Signs unloaded at the outfeed end of the oven are cool enough to be handled comfortably without gloves, and cool enough to be returned immediately for either screen printing or roller coating application. Fans in the cooling zone serve three purposes; they cool the signs, recirculate the air, and the heated air aids materially in the baking operation.

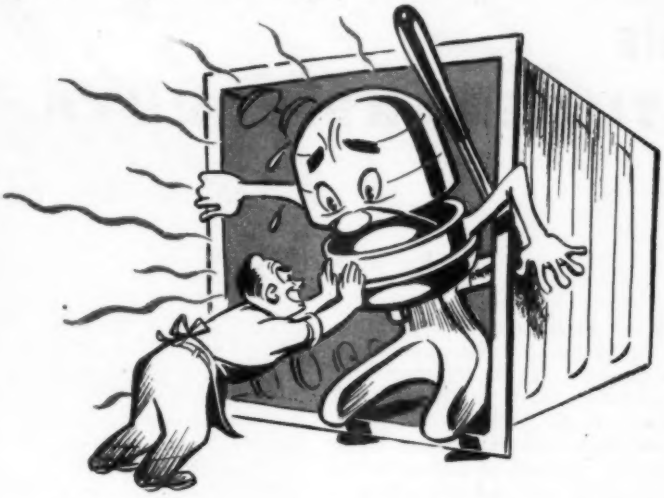
Through sufficient circulation of air, adequate exhausting of fumes and accurately controlled heat, there is no discoloration; that is to say, yellows do not come out brown, and red colors do not fade into pale pinks.

Special Colors Ground to Match Samples

Sometimes a customer will specify a sign with all special colors. To take care of these jobs we have modern paint-grinding equipment. High grade, permanent, dry colors are ground with alkyd resin varnish and titanium dioxide to match the color samples submitted. It would be difficult and costly to buy comparatively small quantities of special colors from suppliers.

Note: Photograph at beginning of this article shows sheet metal signs (printed in colors) going through a roller coater which applies a protective coating of clear finish, after which the coated signs enter an oven.

"Help . . . Help . . . You'll pay for this!"



A finish designed for one baking cycle can't readily be "pushed" through another.

If you are limited to present baking facilities and want to step up production – you have the kind of problem Unichrome "out-of-the-rut" thinking likes to tackle.

Remember – a "fresh viewpoint" often works wonders!

UNICHROME

LACQUERS, SYNTHETICS, BAKING ENAMELS

Products of the Organic Coatings Division of UNITED CHROMIUM, Incorporated
51 East 42nd Street, New York 17, N. Y.
Detroit • Waterbury • Chicago • Dayton • Los Angeles

THE STUDEBAKER TRUCK *Finish*

By J. M. GAUSS

THE same surface preparation is given to automatic hoods, fenders, gravel deflectors and bumpers as that described in a former article dealing with Studebaker truck cabs and bodies. These parts go through a 5-stage setup for cleaning, rust-proofing and drying to assure proper adhesion of the paint.

Primer Is Flow-Coated; Top Coat Is Sprayed

Cleaned parts are transferred to an overhead chain conveyor which carries them into the flow coater where an oil-base primer is flowed on. This flow coater is supplied with material from a 1200-gallon tank. Primer is flowed on at a pressure of 25-lbs. Surplus material flows back into the tank after passing through a filter. The viscosity of the material is 16 seconds at 78° F., No. 4 Ford cup. By this method of application, a film thickness of .4 to .6-mil is obtained.

After draining 30 minutes the flow-coated parts enter an A-type gas-fired oven on the roof of the building, where the prime coat is baked for 55 minutes at 375° F.

When they have become cool the hoods, gravel deflectors and bumpers continue on to the top coat spray booths. All front fenders are first shielded to catch all overspray; then the cold air intake ducts on the inside of these fenders, or inside the fender aprons, are given a heavy spray coat of insulation to cut down the heat from the motor. These ducts supply fresh air to the heater in cold weather, and they provide ventilation during the summer.

Upon entering the first top coat booth, the inside or under surfaces

PART II

Head of the Control Laboratory at Studebaker Corporation explains surface preparation, painting and all paint-curing operations on automotive hoods, fenders, chassis and wheels.

of hoods, bumpers, fenders and gravel deflectors are given a spray coat of synthetic enamel. In booths No. 2 and 3, all outside surfaces are given a double wet coat of the same material.

Inside the flow coater where hoods and fenders are prime-coated. Another set of flow nozzles is located at the right side (not shown) so that all areas are completely coated. Drain pans carry the surplus material back into the supply tank.

To provide sufficient flash (air drying) time, a space of 40-ft. is provided following each of three spray booths, and an equal distance is available between the last booth and the roof oven, which is a gas-fired, convection, A-type. Top coats are baked for one hour at 250° F. Bumpers go through once for base color; then masking tape is applied to the edge moldings. On the next trip through, the center section is sprayed with the body color.

How Chassis Frames Are Painted on Two Sides

Chassis frames are received in prime-coated condition. To facilitate operations, each chassis frame is placed upside down on the conveyor. The gas tank, muffler, braces, etc., are installed along the line, after which the frame passes through double reverse position spray booths where a black synthetic enamel is sprayed over the entire underside of the frame and component parts.

After leaving spray booths, the chassis frame passes under a turning device which picks up the entire frame, reverses it in midair, and then returns it to the conveyor in the same position that it will be in when it is used under a truck.

(Continued on page 38)

Plan showing equipment along conveyor line where Studebaker truck chassis are painted.

Painted wheels pass through this high infra-red oven. They cool as they move to assembly.

In this position frames pass through a second set of double reverse position spray booths where all top surfaces are coated. Force drying of this coat takes place in an infra-red oven; 350° F. for two minutes.

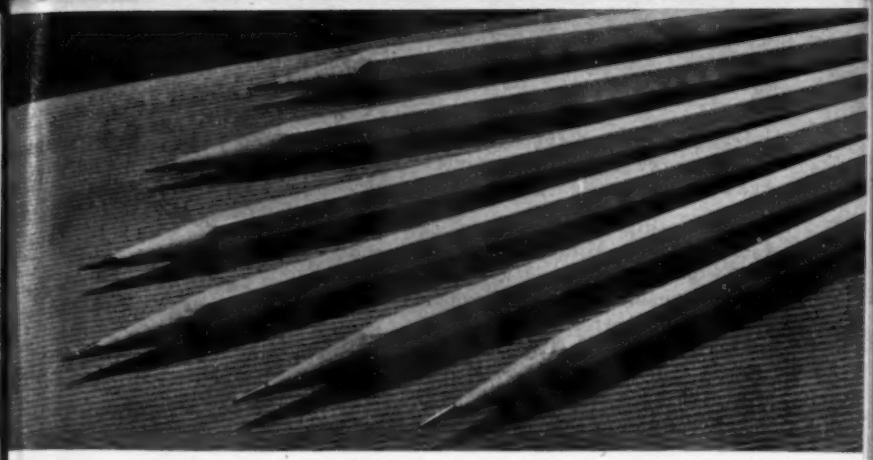
Painted Wheels Baked in Infra-Red Oven

Wheels, when they arrive, have been rust-proofed and prime coated. They proceed from wheel storage on an overhead conveyor to the spray booth for a double wet coat of synthetic enamel in the desired color. A flash (air drying) period of six minutes is allowed before wheels enter a ceiling-level infra-red oven where the finish is baked for 12 minutes at 300° F. In this infra-red oven, as well as in force-dry tunnel on the chassis line, wide angle, gold-plated reflectors and unshielded infra-red lamps are used to assure even distribution of heat and proper baking of all surfaces.

Wheels for some models require striping. This is done with a mechanical striper—with the wheel mounted horizontally on a ballbearing turntable. The center pin on which the wheel revolves serves as a guide to properly position concentric stripes on the wheel. Wheels travel approximately 30 minutes to cool before they arrive at the tire assembly stations.

"Finishes for Aluminum"

A new 124-page, 6x9-in. book, "Finishes for Aluminum" has just been issued by Reynolds Metals Co., 2500 S. Third St., Louisville, Ky. The book furnishes information on the various processes for applying surface finishes to aluminum, as well as the characteristics of the finishes so produced.



Finishing Lead Pencils

ABOUT the turn of the 15th century graphite, the principal ingredient in our present black lead pencils, first appeared. Sticks of graphite without any covering were used for many years. In the 17th century a number of devices were developed for holding and reinforcing the graphite stick. Sticks of graphite were placed in holders of metal and in quills. It was not until 1686 that slender sticks of graphite were placed between strips of wood to approach, in a crude way, the modern wood-cased lead pencil as we know it today.

In 1795 a Frenchman named Jacques Conte started the modern pencil industry by using clay as a binder to hold loose graphite together. By this time practically no natural graphite in stick form was available; only powdered or flake graphite was obtainable in the known mines of that day.

The principal ingredients of the writing lead in our modern pencils are graphite and clay. These materials are blended together in varying proportions to produce variations in hardness. The "lead" in lead pencils, is produced in at least 17 degress of hardness ranging from the softest (6B) to the hardest (9H). In the less expensive pencils, leads are produced in five degress of hardness from the softest, No. 1, to the hardest, No. 4. The ratio of clay to graphite determines the hardness; the higher the

By S. ROBINSON
United Lacquer Mfg. Corp.

percentage of clay, the harder the lead after the graphite clay mixture has been fired.

Wood Casings Made of Cedar, and in Multiple

The straight grained wood casing for pencils is generally made of either Southern red cedar or treated Western cedar. It is cut into smooth slats of a thickness slightly more than half the thickness of a pencil and usually in widths of 7, 8 or 9 pencils. These slats are grooved on one side with grooves of half the diameter of a lead, as shown in the accompanying illustrations.

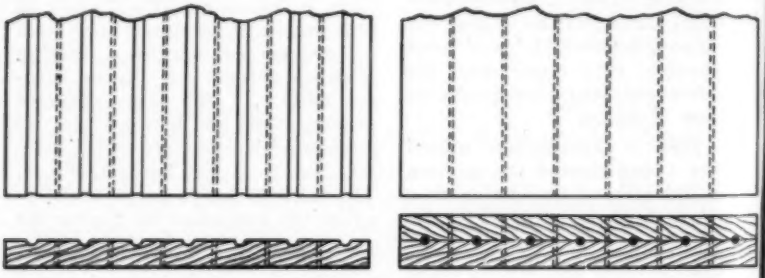
Glue is spread over the grooved surface of a wood slat, prepared sticks of lead are dropped into the grooves, and the grooved side of a top slat is fed over a glue plate or roller and placed directly on top of the bottom slat that holds the leads. This operation forms a solid glued-up block of material for pencils. The entire operation is automatic, proceeding at the rate of 60 to 65 blocks per minute.

The glued blocks are placed in clamps that hold 40 to 45 of them at a time. Surplus adhesive is pressed out at 150 to 200-lbs. per square inch. The clamped-up material is placed in a low heat oven or kiln long enough to set the adhesive and dry out the surplus moisture. When the adhesive is set and the blocks are dry, the clamps are opened and the blocks are fed into specially designed sawing and moulding machines which form the raw wood pencils into either hexagon or round shape, as desired.

Two Types of Coating Machines for Pencils

Two basic types of machines are used in the finishing of wood pencils— the automatic long belt and the semi-automatic turntable. Application of coating material is similar in both types of machines. Only the "handling" is different.

The raw wood pencils are fed horizontally down a hopper and forced, either by piston rod or chain, through a reservoir of liquid coating material. At the exit side of the reservoir a gasket of real or synthetic rubber wipes off the surplus finishing material, leaving a film of only .0001-in. thickness or less. The size of the hole in the gas-



Grooved blocks are coated with glue, filled with pencil lead, pressed and clamped together, allowed to dry and put through machines which cut apart the multiples and shape pencils.

LOOK TO

Watson-Standard

FOR THE OUTSTANDING IN *Industrial Finishing*

For decorative and functional coatings that are outstanding, look to Watson-Standard. Our laboratories have developed prescription finishes for every need.

An example: Watson-Standard Wet Print Varnish. This versatile coating can be used over set or dry printing as well as a wet print varnish, providing a glossy, durable coating which really stands up.

You can avail yourself of Watson-Standard's experience in this field without obligation. Write today.

℞ TOUGH JOB HEADQUARTERS
Prescription Finishes
Give us your coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

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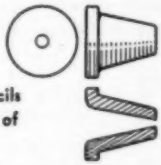
FACTORY AND GENERAL OFFICES: PITTSBURGH, PA.
WAREHOUSES: BOSTON, BUFFALO, DETROIT, NEW YORK



This sketch shows front, side and cross section views of rubber gasket thorugh which pencils are forced to rub off all of the surplus lacquer.

ket is usually .02 to .03-in. smaller than the diameter of the pencil. A hexagon-shaped hole is used for a hexagon pencil and a round hole for a round pencil.

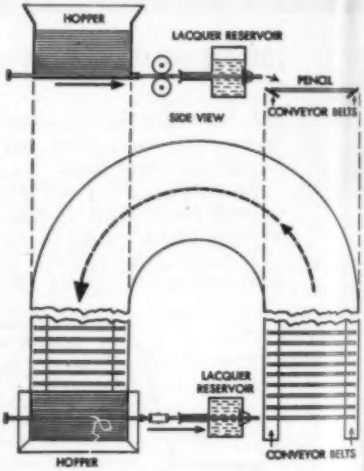
In the turntable type of machine, coated pencils drop onto a large metal turntable which slowly revolves. After one rotation, the pencils are removed by hand and placed in a basket to dry thoroughly before application of the next coat of finishing material.

Pencils Forced Through Reservoir of Lacquer

In the newer type of machine, the freshly coated pencils, after passing through the reservoir of paint and through the gasket, drop on two narrow endless belts which are set at an angle so that only the ends of pencils contact the belt. The pencils are carried crosswise to a point where they either drop into a basket or are automatically turned and stacked onto a slow moving return belt which feeds them back into the hopper for additional coats of finishing material. Elapsed time from reservoir to the end of the first conveyor is about 45 seconds, and 1½ hours on the return belt.

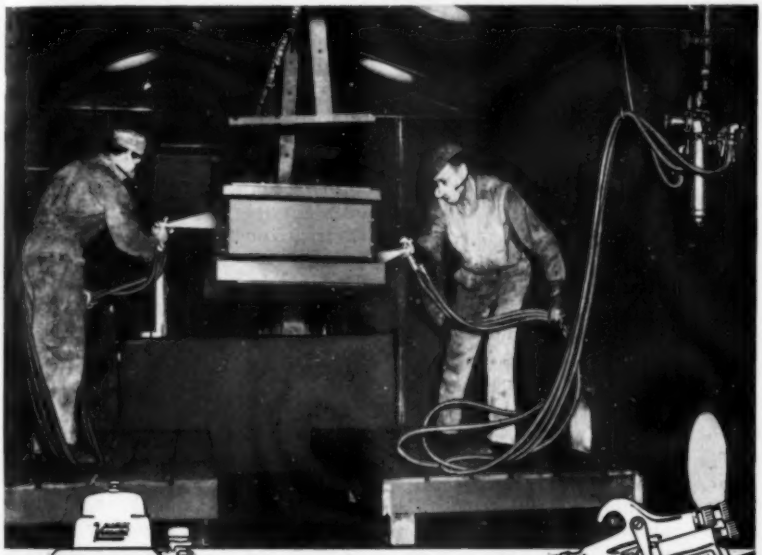
Pencils are run through the reservoir of finishing material anywhere from three to nine times, depending upon the quality of finish desired. The last one or two coats usually consists of a gloss lacquer to give the final high luster or gloss to the finish.

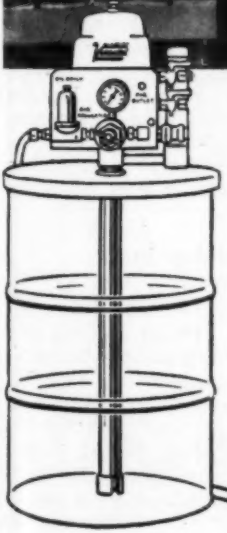
Pencils to be painted white or a pastel color are often given two first coats of sealer to prevent the natural wax and color of the wood from bleeding through to the surface. The sealer coats are followed by coatings of specially formulated nitrocellulose type lacquer enamels of extremely fast drying, high flexibility, cold-check-resistance and rapid-solvent-release characteristics. Finally, the pencils are given one or two gasket coats of high-gloss clear lacquer of the same quality as the enamel.



This diagram (side and plan views) shows an automatic mechanized pencil-painting setup. The bottom pencil in hopper is advanced by plunger to rollers and into paint reservoir; it passes through paint reservoir, through rubber gasket and drops onto conveyor. Paint dries as pencil is carried away by conveyor. This cycle is repeated for added coatings. In some setups, two pencils (instead of one) are put through at a time.

Faster Finishing at Less Cost





Pump and Spray from the Original Containers

1 Air-operated Versatal Pumps dispense materials directly from original drums . . . serve up to 6 spray heads.

2 Hydraulic pressures deliver materials through as much as 1000 feet of hose or pipe.

3 Versatal eliminates "time-out" for material handling and transferring . . . increases output per man hour.

ALEMITE
Versatal
SPRAY PUMP EQUIPMENT

Stewart Warner

For complete details write Alemite, 1805 W. Diversey Pkwy., Chicago 14, Illinois.

Colors other than whites or pastels do not usually require sealers —that is, when properly formulated nitrocellulose enamels are used.

Factors That Affect Finish of Pencils

The size and shape of the rubber gasket used, and the formulation of rubber used in its manufacture—these features have an important bearing upon the quality of the finish and the "mileage" obtained.

Other factors that affect the finish are the speed of the machines and the width of the coating material reservoir. The speed of finishing machines may be anywhere from 110 to 140 pencils per minute, depending upon whether one or two pencils are fed through the reservoir of paint at one time.

The width of the reservoir determines, to some extent, the viscosity of the finishing material used. A wider reservoir requires a lower viscosity material; a narrower reservoir will take heavy viscosity materials, requiring fewer coats.

The percentage of natural oil or wax in the wood has an important bearing upon the type of finishing material to be used. Oil or wax content of the natural wood should be less than 3% to avoid the need of using sealer coats, and for best coating conditions.

After receiving their last finish coat the pencils are fed through "heading machines" to remove surplus color from their ends. Then they are fed automatically through assembly machines where they are stamped, fitted with the tip and rubber eraser, inspected and packed for shipment.

Novelty Finishes Call for Special Treatment

Novelty finishes require special treatment, depending upon the novelty design of coating desired. The pencil industry uses water mottle, sponge mottle and various stripe designs. Each finish requires special materials and often special handling.

Advertising pencils require the greatest degree of care in finishing since, after they are finished, the pencils are printed with ink and dipped into a clear lacquer to protect the ink printing. This dipping operation requires a specially formulated top coat of clear lacquer to prevent bleeding of color and avoid washing down the ink printing.

If a wood that contains considerable natural color and wax has been used, several "gasket coats" of a shellac sealer should be applied to the pencil before applying lacquer enamel. This is generally followed by two coats of a clear lacquer. After the pencils have been assembled with tip and plug or eraser, the ink printing or design is applied by rolling the pencils over an inked rubber stamp.

Multiple Dipping in Clear Lacquer

The freshly printed pencils are inserted in a vertical position in a tapered hole in a wooden board by wedging the eraser end into the taper. One gross of printed pencils is mounted on each board. The entire board, after the ink is dry, is placed in a mechanically operated dipping machine with pencils hanging down. *(To page 46)*

The finishing touch...

. . . and the Stanley finish on his equipment helped. Protective coatings on rods and reels . . . finishes preventing water logging of lines, permitting smooth running, and cutting down wear and tear . . . all are important to fishing success.

It is possible that the success of a new product or the bettering of an old will hinge on the finish, too. For 25 years the Stanley Chemical Company has been developing industrial coatings to beautify . . . to preserve . . . to increase length of service . . . and to add sales appeal.

Let the Stanley policy of "special finishes for special applications" help you with your problems. Let the Stanley research staff with its unexcelled facilities put the finishing touch on your products. Write today to the Stanley Chemical Co., East Berlin, Conn.

STANLEY

STANLEY CHEMICAL

INDUSTRIAL COATINGS

LACQUERS SYNTHETICS JAPANS ENAMELS

Pencils are dipped into the tank of clear lacquer up to the tip and withdrawn. The bottom ends of the pencils are blotted on paper or lint-free cloth to remove any surplus run-down of the lacquer. When the pencils are dry they are ready for packing and shipping.

Lettering Is Die Stamped in Gold or Silver

Standard brand pencils are hot-die stamped in either gold or aluminum on one single line. Ink printed pencils permit design or letter printing completely around the pencil in two, three or four colors in one operation.

In general, the average pencil manufacturing plant is a highly mechanized factory with an added demand upon the ingenuity of the wood, lacquer, rubber, clay, graphite and metallurgical chemist for the successful production of quality writing instruments.

Mr. J. F. Roche Elected Board Chairman of Binks Mfg. Co.

Directors of Binks Mfg Co., at their annual meeting in the company offices at 3114-40 Carroll Ave., Chicago Ill., on April 26, elected President J. F. Roche as Chairman of the Board. He is succeeded in the presidency by his son, Burke B. Roche. The Binks company is widely known for its industrial spray painting equipment, industrial cooling towers, nozzles, and other large installations in these fields.

The Binks organization was founded more than half a century ago by the late Joseph Binks, who perfected the first successful paint spray gun and other widely used inventions. In 1928, Mr. Roche was made executive vice president. He has served as president of the company since 1936.

The progressive ideas and energy of Mr. Roche have been responsible for the firm's growth into the world's largest exclusive manufacturer of industrial spray painting equipment and spray nozzles.

Burke B. Roche, newly elected President of the Binks Mfg. Co.

These years of progress under Mr. Roche's administration have been marked by many Binks developments, which include the Dynaprecipitor water-wash spray booth, paint circulating systems, and many other products now regarded as standard and indispensable equipment by the finishing industry.

Burke B. Roche, who succeeds to the Binks presidency, was elected vice president in 1948 and has been in charge of the company's Industrial Division. After graduating from Loyola University, cum laude, with a bachelor of philosophy degree, he attended Northwestern and De Paul Law Schools. He entered upon his business career with the Binks Company in 1939. He installed finishing equipment in the Kingsbury, Ind. Ordance Works, one of the largest systems ever made. He later graduated from the Naval Ordnance School at the Naval Gun Factory, in Washington, D.C., and served as a Naval Ordance Officer in the Pacific theatre of operations during the war.

Mr. J. F. Roche, newly elected Chairman of the Board, Binks Mfg. Co., Chicago, Illinois

That's it,

Mr. Midwestern Manufacturer...

...Egyptian's new factory in Lafayette, Indiana. It's now ready to serve you with the very best in industrial finishes, which, during fifty-six years, you've come to expect from our New Jersey plant.

The South Kearny, N. J. division of The Egyptian Lacquer Mfg. Co.

Reproducing

THE REPRODUCTION of genuine wood grain has a definite and highly important place in the manufacture of metal furniture, fixtures and paneling. In wood furniture made of gum, poplar, tupelo, or any other specie that has little or no grain pattern, graining is used to enhance the beauty of these pieces, to give them the appearance of walnut, mahogany, prima vera, or some other beautiful cabinet wood.

Two methods of reproducing wood grain on metal, wood or other materials are available. One of these, hand graining, requires the services of an experienced and skillful grainer; it is slow and the results produced lack the uniformity that is demanded in production work.

Reference to illustrations at left:

Top view, No. 1, shows operator removing surplus ink from surface of etched copper plate, with a squeegee. Ink remains in the depressions or "wells" to be picked up later by graining roller.

No. 2 shows operator carefully rolling the clean graining roller over inked graining plate to pick up ink from depressions or "wells" of etched copper plate. The roller is advanced no more than one revolution. Then it is carefully lifted off the plate and transferred to the panel or flat surface which is to be grained.

No. 3 shows operator carefully rolling the inked roller over a smooth ground-coated surface on which the true wood grain will be printed in faithful reproduction. After the graining ink is dry or baked, the printed surface will be coated with a clear protective coating to give it depth and luster.

[Page 50]

WOOD GRAIN RAPIDLY

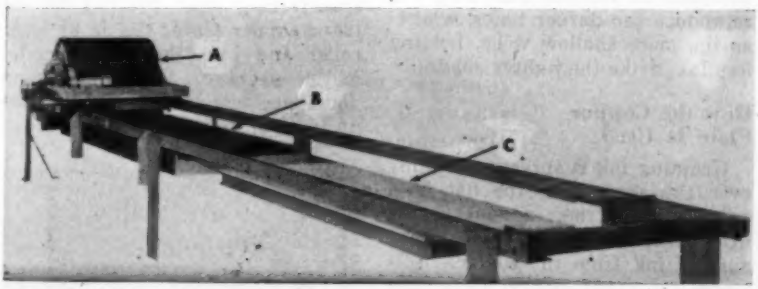
BY W. NELSON WHITE
American Richwood Products Co.

The reproduction of natural wood grain on plain surfaces, by the use of an etched copper plate and inking roller is now speeded up for fast production by an automatic power machine.

The etched copper plate method, on the other hand, does not require an expert operator. It is extremely fast, and the results obtained are a faithful reproduction of the grain pattern for any number of pieces produced. I think we can safely discount hand graining and confine our discussion to the etched copper plate method.

How the Copper Plate Is Made

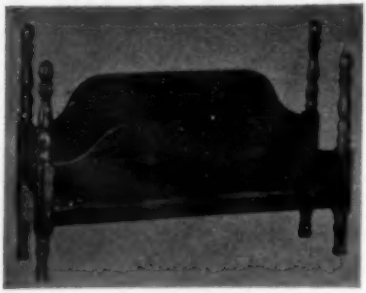
The principle involved in the copper plate method is quite simple. A panel is prepared of attractive matched veneer of the particular specie of wood desired or specified. The grain pattern is photographed on a copper plate and then etched in much the same way as copper engravings are made for use in the printing of illustrations. (To p. 52)



This graining machine will grain flat surfaces as large as 30x82-in., which means that a great many small pieces can be grained in one operation. Roller "A" runs over the graining plate "B", picks up ink and transfers it to the pieces which have been laid on the table "C".

When the carriage on the machine reaches the ends of the rails on which it travels, the roller is automatically raised, the motor reverses, and the roller is carried back to the starting position "A". The time cycle of the machine is 25 seconds.

By using a dolly on casters it is possible to run an assembled cabinet under the rolls in the same position as the table "C". The graining is then the same as for flat pieces, the roller running over the plate "B" and then over the side of the cabinet. It is possible to pull the cabinet out of the machine and turn it over to grain the other side immediately.



Faithful reproduction of figured woods gives any product added eye appeal.

The surface of an etched copper plate contains many thousands of indentations or "wells"; in fact there are about 22,000 "wells" per square inch, varying in depth from 0.002-in. to 0.0005-in. When ink is applied to the etched copper plate, the deeper wells hold more ink, therefore in reproduction they will reproduce the darker tones, whereas the more shallow wells, holding less ink, make the lighter shades.

How the Copper Plate Is Used

Graining ink is spread uniformly over the surface of the flat level copper plate; then a squeegee is drawn across the plate to remove surplus ink from the surface; this leaves the thousands of wells filled with ink.

Next a composition or rubber roller is carefully rolled over the inked plate for one revolution to pick up the ink in the thousands of wells. The grain design reproduced, with all of its intensity of coloring, is now on the surface of the composition or rubber roller.

To transfer the wood grain, the roller is rolled for one revolution over the prepared surface of metal, wood, or composition on which the grain is desired. By a prepared surface, I mean that the surface has been made smooth and clean and has received a ground color coat which is lighter in color than the graining ink. The ground color coat has been allowed to air dry or has been baked before transfer of wood grain is made. The combined colors produce the coloring of the wood to be reproduced.

After the graining ink has dried, a protective coat of clear lacquer or synthetic enamel is sprayed over the surface. On metal products the top coat may be baked.

Two Methods of Transfer May Be Used

Two methods are available for transferring wood grain from the inked copper plate; one is by hand roller and the other by an automatic machine. Copper graining plates are available in various sizes up to as large as 30x82-in. *(To 54)*

Poster bed with beautiful crotch mahogany graining on head and foot boards.

FLOCK

Short-cut fibres of all types used to produce effects of suede, felt, velvet, mohair, velour, carpet on any surface in an economical manner.

Let our 25 years experience be your guide to quality results at lowest possible cost.

Rayon Processing Co. of R. I., Inc.

PIONEER PRODUCERS OF SURFACE COATING FLOCKS

55 MOSHASSUCK STREET **PAWTUCKET, R. I.**

POLLAK PAINT CO.
715 Main St.
Buffalo, N. Y.

LAMBERT-NEW ENGLAND CO.
79 Sudbury St.
Boston, Mass.

H. R. MEININGER CO.
409 16th St.
Denver, Colo.

J. GORDON SMITH CO.
3901 Main St.
Dallas, Texas

The hand roller method is exactly what the term implies. The composition or rubber roller is operated entirely by hand in transferring the wood grain from the inked copper plate to the surface to be finished. This method is used on flat surfaces and it is especially adapted to curved and odd shaped pieces. After each transfer of grain, the surface of the roller must be washed with a cleaning solvent.

The automatic machine includes a long frame which supports the copper graining plate, the panel to be grained and a track over which the power driven graining roller travels. The inking mechanism, squeegee and composition roller operate automatically in correct sequence, even to cleaning the roller, so that all the operator has to do is to remove the grained panel and replace it with another panel to be grained.

This machine can be used for graining assembled cabinets by removing the panel bed section. Then the assembled cabinet is placed under the roller frame to receive the impression of wood grain. After the transfer has been made on one side, the cabinet may be turned immediately to be grained on the other side.

For graining flat sheets of metal, wood, plastic or composition board, a time cycle of 25 seconds is possible, therefore you can readily understand that the production capacity of an automatic graining machine is much faster than to operate the graining roller by hand.

Mac's FASHION NGR DUPLEX STAINS

Are manufactured in all colors and shades. Do not raise the grain . . .Require no sanding . . . Will not bleed through sealer, lacquer, shellac or varnish.

Have same permanency and uniformity of color as water stains. Can be used as shading stains over filler, shellac or sealer with permanent effect.

Reduce costs by eliminating sanding and wash coating.

Write for samples and a descriptive folder.

The Lawrence-McFadden Co.

Headquarters for Fine Finishes Since 1875

7430 STATE ROAD **PHILADELPHIA 36, PA.**

Finishing METAL CASKETS

By Joseph Blaser

Finishing Foreman at the Crane & Breed Casket Co., Cincinnati, Ohio, explains cleaning and finishing methods used on all types of metal caskets.

THE MODERN trend in metal casket finishes is toward the decorative but still on the conservative side. The greatest demand is for subdued metallic finishes—silver, bronze and copper, all in various shades and all highlighted and shaded. There is some demand for deep pigmented colors with dark shaded mouldings and contrasting highlights.

Caskets are made of bronze, copper, zinc and steel. Finishing operations are identical for all metals. Of course, bronze, copper and zinc do not rust during or after fabrication—and we use specially treated steel which practically eliminates rust on these steel caskets.

Regardless of the metal used, all caskets are thoroughly washed with

The spray operator in foreground is spraying a double coat of gloss lacquer on casket.

mild phosphoric acid upon arrival in the finishing room. For ease of handling, each casket rides on a 24-in. high dollie. After the acid bath, caskets are inspected and any dents or nicks are dinged and smoothed out.

Clean caskets, still mounted on dollies, go to the prime coat booth where a coat of gray lacquer primer is applied. The prime coat is force dried for ten minutes at 250° F. in an infra-red tunnel. The entire surface is sanded with No. 180 sandpaper. Inspection follows, and spot filling is applied where needed.

Before the caskets receive a color coat their surfaces are wiped with tack rags to make them perfectly clean. This color coat may be one of the various shades of copper, gold, silver, bronze or deep pigmented color; all of these coatings are lacquer-base materials. Each color is mixed according to a definite formula.

Highlighting; Clear Lacquer; Bake; Buff; Polish

Because caskets go through production in sequence, according to customers' orders, it is impossible to group caskets going through the finishing room according to their color requirements.

Next the casket is shaded or highlighted with a pigmented lacquer. This is allowed to air dry for about 15 minutes; then a double coat of clear gloss lacquer is applied and the casket is placed in a batch type oven where the finish is baked for 15 minutes at 170° F.

After the casket is removed from the oven it is allowed to cool for 30 minutes; then it is wet sanded with No. 400 wet-or-dry sandpaper. After sanding, flexible shaft buffing wheels, using wet compound, are used to buff the entire surface. Buffing is followed by dry polishing, using the same type of wheel with a dry polishing compound. A thorough inspection follows, along with any necessary touch-up work that may be needed. Caskets are then delivered to the up-fitting department.

Allied Finishing Specialties Appoints Representatives

The Allied Finishing Specialties Co, 2601-75 W. Grand Ave., Chicago 12, Ill., announces appointment of the following sales representatives:

J. E. Bond, Box 802, Ft. Wayne, Ind., to cover northern Indiana; Cal-Del Co., 837 Locust St., Wilmington, Dela., to cover Philadelphia, Camden, Wilmington and Baltimore; L. R. Dauer, 116 Newbury St., Boston, Mass., to cover Massachusetts, Connecticut, Rhode Island and Vermont; Sheldon Dunning Co., Smith Tower, Seattle, Wash., to cover Washington, Oregon and Idaho; Paul Egan, 75 S. May St., Aurora, Ill., to cover the Fox River Valley and Southern Illinois; Eynon-Dakin Co., 1847 W. Bethune Ave., Detroit, Mich., to cover Michigan; John R. Feeley of the Consolidated Sales Co., Lockport, N.Y., to cover the state of New York west of Syracuse; Leo F. Fondroy, Albert City, Iowa to cover western Iowa, Minnesota and Nebraska; John W. Freudenberg, 525 W. Rock Hill Rd., Webster Groves, Mo., to cover St. Louis; Mission Electric Mfg. Co., 132 W. Colorado St., Pasadena, Calif., to cover California; Northern Products Co., 607 Pine St., Stillwater, Minn., to cover Minneapolis; Sidney P. Rosenthal, 3214 Berkshire Rd., Cleveland Heights, Ohio, to cover the state of Ohio; C. J. Whitworth, 4342 Marquette Ave., Jacksonville, Fla., to cover the state of Fla.

Infra-Red Ovens Catalog

A new illustrated and informative booklet about infra-red ovens for faster more economical drying and baking operations has been published by Triangle Equipment Co., Inc., 45 River Road, Nutley, N.J. This is the firm that last October purchased the Radiant Heating Division of the C. M. Hall Lamp Co., Detroit, Mich. The booklet contains eight pages 8½x11-in. It is printed in two colors and has several striking illustrations.

Finishing SYSTEMS

for ENAMEL • LACQUER • PAINT • VARNISH

. . . an Investment that PAYS OFF in QUALITY, TOP EFFICIENCY, and LOWER PRODUCTION COST!

Here, again, is a typical Mahon solution of a complex finishing problem . . . a complete self-housed finishing system planned from-the-ground-up, engineered and built by Mahon. A finishing system of this type, installed adjacent to manufacturing buildings, has many advantages . . . most important of which is freedom in planning, which results in 100% efficiency in production layout and equipment performance—all building restrictions and consequent compromises are eliminated, because the exterior housing is designed to fit the finishing system. The current trend in industry is toward this type of efficiently planned, self-housed finishing system to produce the finer sales-influencing finishes so important in marketing today. Where space adjacent to manufacturing buildings is not available, the complete system may be installed on the roof, in a court, or areaway. Remember, when you are contemplating new finishing equipment, that the Mahon organization has pioneered development in this highly specialized field for twenty-nine years . . . broad experience in every industry where finishing constitutes a major production operation, backed by constant research and experimentation, has endowed Mahon engineers with a wealth of technical knowledge and practical know-how not available to you elsewhere.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 11, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning and Rust Proofing Equipment, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Systems, Drying and Baking Ovens, and Paint Reclamation Units. Also, Core Ovens, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

MAHON

4-COLOR SILK SCREEN PROCESS REPRODUCTION

By Michael Elukevich
Superintendent of Superior Silk Screen Printing

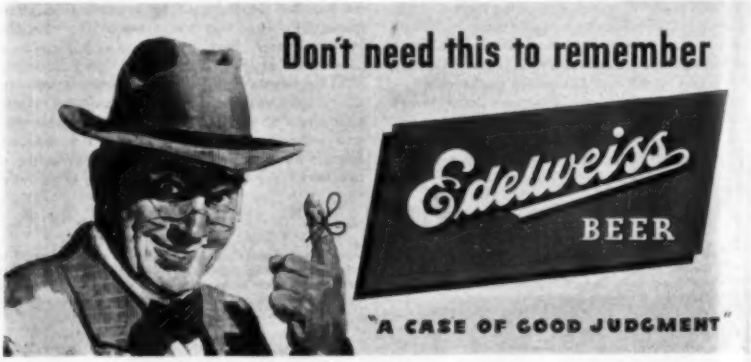
How screen printing stencils are made from enlarged photographs of a 4-color painting and how they are used to make perfect 4-color reproductions.

FOUR-COLOR silk screen reproduction compares favorably with offset printing, and for comparatively small runs, it is more economical. This type of work can only be accomplished through halftone photographic screens. The number of colors in the original painting determines the number of screens needed to do the job. One screen stencil is generally required for each color.

Photograph the Painting; Enlarge the Photograph

For example, let us consider the advertising sign in the accompanying picture. Four colors were required to produce this sign—yellow, red, blue and black. An oil painting of the complete sign is mounted on a fixed camera frame, and four photographs are taken, using color separation plates.

Each color—yellow, red, blue and black—is photographed through a 133-line screen on glass. This photograph is "blown up" to the size and number of dots required for printing. In this case it is a 40-



Advertising sign reproduced in four colors on B-flute strawboard by silk screen process.

Reduce Metal Finishing Costs

Through the 2-Factor Formula

Application of the *2-Factor Formula* consists of (1) careful selection of *quality* abrasives and, (2) the correct use of these abrasives. Try it. You'll find it paves the way for better finishes, higher production, and lower costs.

It's easy to select quality abrasives. Ask your jobber for abrasives by CARBORUNDUM. For wet grinding or dry grinding, he can give you belts, sander discs, and other forms that are exactly suited to your requirements. They cut fast and cool. They resist shedding, cracking and loading. They do more work per hour... give more production per unit.

A good jobber can also make suggestions on correct use of abrasives. Technically informed, he's fully qualified to help you. Through broad contacts he knows how successful plants get better finishes, higher production, lower costs. *Ask* for his advice. The Carborundum Company, Niagara Falls, New York.

COATED ABRASIVES BY

CARBORUNDUM

TRADE MARK

BELTS SHEETS ROLLS DISCS

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company

line dot. The blow-up, being negative, is then contact printed on another film to obtain a positive (photograph). This positive is mounted on a piece of heavy plate glass and sprayed with clear lacquer to make it waterproof. When dry, the surface is lightly waxed, to prevent the carbon tissue (which will be subsequently applied) from sticking to the glass.

Transferring the Picture Onto Plate of Glass

Next, a sheet of carbon tissue, cut the same size as the piece of plate glass, is immersed in a solution of pottassium dichromate to make it sensitive to light. The treated carbon tissue is then mounted on the plate glass face down. Then the glass is reversed and placed under an arc light from 4 to 15 minutes. The time will vary according to the intensity of the light used.

After exposure is completed the glass and carbon tissue are immersed in hot water. This wetting with water permits the backing paper to be removed, but the carbon tissue emulsion remains on the glass. By agitating water over the glass, those areas which were not exposed to the light are washed away, leaving only the design of the particular color photographed adhered to the glass.

How Carbon Tissue Is Applied to Silk

The glass is then rinsed with water, and while it is still wet a piece of 14-xx silk (which has been stretched taut and fastened to a wooden frame) is placed over the surface. It is brought into full contact with the carbon tissue and lightly blotted or patted to properly adhere the silk and the carbon tissue. Then it is ready to be dried. It generally takes about twenty minutes to dry with the aid of an electric fan. Pigmented lacquer is brushed on, to block out any areas not to be printed. Each screen frame (one for each color) is numbered to designate the job and the color.

It is essential that only transparent ethyl-cellulose-base paints or paints especially recommended and sold by reputable supply houses be used for halftone screen process work. This effectively brings out the color combinations required for the finished art. Exact registration is also necessary.

Setting up for this type of screen printing must be guided more or less by trial and error; that is to say, it is necessary to move the screen either to the right or to the left to avoid a moire* effect. Just how much the screen must be moved will vary with individual colors. Roughly speaking, yellow requires a turn of the screen about 22°, red about 7°, blue about 7° and black about 17°.

How B-Fluted Strawboard Is Screen Printed

While silk screen process work can be printed on practically any properly prepared surface, the job illustrated at the beginning of this article was reproduced on B-fluted strawboard. After checking regis-

*Peculiar illusion or mirage pattern produced when you look at two screens that are not in alignment vertically and horizontally

With P&L Ripple Finish, time and temperature may vary but texture and color will not.

PRATT & LAMBERT-INC.
Industrial Finishes
1849 — One Hundredth Anniversary — 1949
NEW YORK BUFFALO CHICAGO
FORT ERIE, ONT.

tration and position of the screen to avoid any moire effect, actual printing is started. Because of the thickness of the B-fluted strawboard, only one sheet at a time is placed on the table under the screen frame for printing. A flexible squeegee with a fairly square working edge must be used for this type of printing.

The colors are processed on 80-lb. offset paper which is mounted on the B-fluted strawboard. Printing on this kind of paper causes the face side, on which the printing is done, to have slight depressions or corrugations. It is for this reason that the squeegee must be flexible enough, yet firm and sharp enough, to force the colors down into these slight corrugations, and to cut the outline sharp and clear.

The yellow is screened first; then the red, next the blue, and finally the black. From three to four hours of air drying time is allowed between colors, and from six to eight hours after the last color.

What Consistency to Make Process Paint

The ethyl-cellulose-base paint used in halftone screen processing is mixed fairly thick. It would be impossible to give exact viscosities, for this is dependent upon the color, type and surface on which it will be applied, and the type of art work to be produced. Determination of how much xylol to add to thin the mixture must be left pretty much to the individual operator's experience and good judgment. then, by a bit of trial and error, final determination is made before actual printing is started.

Egyptian Supervisors in Midwest

Some of the men who are superintending operations in The Egyptian Lacquer Mfg. Co.'s new midwestern division in Lafayette, Ind., are:

John H. Whiteside,, chief chemist, born and educated in Scotland After attending the University of Chicago, he entered the coating materials industry as a chemist. During the late war he was engaged in the development of new aircraft finishes and has made important contributions to the improvement of many diversified types of industrial coatings.

Frederick J. Keller & John H. Whiteside

The midwest sales region will be managed by Frederick J. Keller, former Egyptian sales representative in the state of Michigan. Mr. Keller's headquaters will be in Lafayette.

The sales region which Mr. Keller vacated upon his appointment will be serviced by Mr Hugh C. Crawford, Jr., former resin sales division representative for The Bakelite Corp.

The Lafayette plant superintendent is Robert B. Lett, who entered the industrial coaitngs industry as a chemist upon graduating from Pratt Institute. His 16 years of experience have covered both laboratory and production work in all types of industrial finishes including specialty, implements, and furniture coatings. He has been associated with firms in several sections of the country.

Paint Catalog Available

A new 32-page catalog featuring over 75 various kinds of performance tested paints and protective coatings has just been published by Cheesman-Elliot Co., Inc. (Technical Paint Makers) 647 Kent Ave., Brooklyn 11, N.Y Page size of the catalog is 8½x11-in and it is printed in black and chrome yellow. Chemical resisting, heat-resisting, fire-retardant, bleed-proof, and metal preservative paints and primers are included.

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Coating Small Hardware WITH LACQUER

By Fred Rossberg

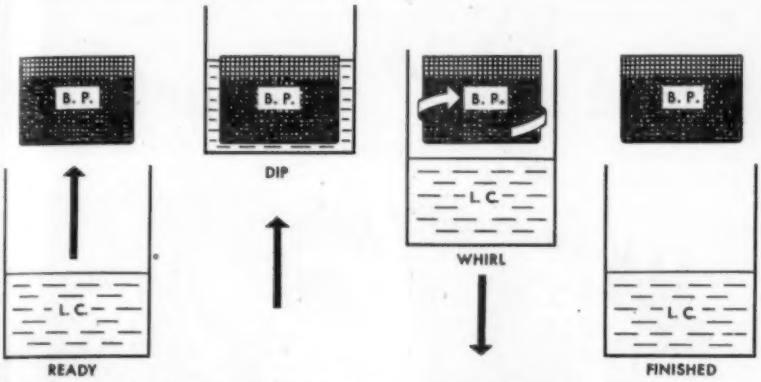
Finishing Foreman of The American Hardware Corporation, Russell & Erwin Div'n., tells how brass, bronze, steel and iron hardware parts are cleaned and coated with lacquer in modern dip-whirl coating machines.

MOST PEOPLE who buy or use builders' and cabinet hardware, such as sash lifts and locks, casement fastener parts, lock cylinders and strikes, cupboard catches, bolts, screws, and other small parts, probably never give a thought as to why these items are always bright and shiny, regardless of how long the dealer has had them in stock. Of course, the answer is the protective coating they receive before they are packed for shipment. Every part, regardless of its size—even the tiniest brass or steel screw—is given a coat of clear lacquer before it is assembled or wrapped for packaging.

Cleaning, of Course, Precedes Coating

Polished and buffed brass and bronze hardware parts, both cast and wrought, are generally cleaned in a trichlorethylene vapor degreaser; then some are scoured, either dry or wet, and finally cleaned and dried before coating. A large volume of brass and bronze plated hardware parts are barrel-burnished before lacquering. All of these parts are particularly adapted to lacquering by a combination dipping and whirling operation.

Centrifugal or dip-whirl finishing is economical as well as efficient



This diagram shows the essential steps in dip-whirl coating of small hardware. B. P. is the wire mesh basket of parts not more than three fourths filled. L. C. is the lacquer container not more than half filled. The wire mesh container remains in one position. To dip the parts into lacquer, the lacquer container is raised, as shown in step No. 2.

for coating these comparatively small parts. It is economical because practically all of the lacquer used in the machine actually goes onto the product. It is efficient because bulk quantities of small parts can be coated with a minimum of handling and in a very short time.

How Dip-Whirling Operates in Practice

Production on the two machines in our finishing room, using one operator, averages 7000-lbs. per 8-hour shift. The weight of production depends upon how many pieces go through. You may wonder how it is possible to obtain this volume of production on two dip-whirl machines with only one operator. The two small machines are placed side by side, as shown in the illustration at the beginning of this article.

The operator loads the work basket and locks it in the machine. He dips the basket of parts by *raising a half-filled lacquer container* within the machine (this instead of lowering the basket of parts into the lacquer). Then he lowers the lacquer container to a position so that its top edge is even with the top edge of the work basket (and so the bottom of the work basket is above the level of lacquer in the lacquer container). He moves a lever to "spinning position" and the loaded basket of coated parts revolves, throwing the excess lacquer back into the top part of lacquer container.

While the spinning operation is in progress on one machine, the operator loads, dips and sets the other machine to spinning motion; then he returns to the first machine to unload the coated pieces and refill the basket for the next cycle. This makes a 3-minute finishing cycle on each machine. Of course, the spin-

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ning time is more than would ordinarily be required to throw off excess material, but the additional spinning is not harmful to the finish.

Operator Must Have Knowledge and Experience

Centrifugal finishing is more than a mechanical operation. It calls for something more than just putting a batch of hardware parts in a wire basket, pulling a couple of levers, and then dumping the parts out to air dry. It requires a knowledge of the relation between the viscosity of the coating material and the type of parts to be coated. To obtain best results the operator must develop techniques to suit various shaped parts, and a rhythm of motions that makes for efficiency. A few examples may serve to illustrate what I mean.

For dip-whirl finishing, the lacquer (as it comes from the manufacturer) is ordinarily mixed in the proportion of 40% lacquer (27% solids) and 60% thinner. Of course, as time goes on, there is a slight loss of thinner by evaporation, and more solvent must be added to the coating material.

When coating hardware parts that have rather large flat surfaces, the viscosity of the lacquer must be carefully watched. If the lacquer is too thick, the parts will stick together and they will not air dry properly. If the lacquer is too thin the parts will not be adequately coated for proper protection. If the coating is too thin it may be detected on brass or bronze parts by an iridescent effect—much the same as the rainbowlike play of colors in a soap bubble or in mother-of-pearl when the part is held in certain light.

As an example of just one of the many techniques that only experience can teach, when an operator removes a basket of these same hardware parts (having rather large flat surfaces) from the machine, he shakes the work basket slightly two or three times before dumping the parts on screen trays for air drying. This has a tendency to prevent any pieces from sticking together.

Special Techniques Used

There are also techniques in regard to the care of dip-whirling machines. Our work baskets are immersed in lacquer thinner overnight, so they will be clean when the next day's work begins. During noon lunch period the work baskets are again cleaned by immersing them in lacquer thinner. A clean basket assures complete as well as fast coverage in the dipping operation. It also provides free and unhampered exit for excess lacquer during the whirling.

Work baskets should never be filled more than three quarters full with parts; otherwise, when the basket of dipped parts is set to spinning, some lacquer will be thrown outside the lacquer container onto the inside walls of the machine. Filling the work baskets too full with parts not only wastes material, but calls for the labor of cleaning the inside of the machine as well. All lacquer thrown off the parts by centrifugal force will fly back into the upper part of the lacquer container. [END]

Coating Record-Player Turntables with Flock

By H. F. Thiele, Jr. and E. G. Koriath

IN PRODUCING turntables for record players, we have combined the spraying of adhesive and flock, and the drying of same, in an automatic conveyorized setup. The turntables, as we receive them, must be degreased and cleaned ready to receive a coat of paint on the underside, and flock adhesive on the top side and edges.

Underside, Brown Lacquer; Top and Edges, Adhesive

Clean turntables are first placed on spindles of a traveling bed-type of chain conveyor. They enter a spray booth in which there are three fixed spray guns. The first gun is located below the conveyor. Its nozzle points up to coat the brown lacquer. Turntables are mechanically revolved as they travel the entire width of this booth.

An operator removes the undercoated turntables and places them temporarily on a table where the coating is allowed to air dry for about five minutes. Then the turntables are replaced on the conveyor. In actual production the operation is continuous. Every time a wet-coated turntable is removed

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from the conveyor, it is replaced by a dry turntable. So much for the undercoating.

The second and third spray guns are located above the conveyor; their nozzles are pointed down to coat the face and edge of each revolving turntable with a varnish base adhesive preparatory to flocking. This is a pigmented material which matches the color of the rayon flock we use.

Flock is Sifted on— And also Sprayed

Next in line is the booth in which flock is applied. Above the conveyor chain there is a metal box 10-in wide, the bottom of which is made of a fine mesh screen. Loose flock placed in this box sifts down on the turntables as they pass through the booth. Supplementing this box of loose flock, the operator sprays flock from the flock gun; this spraying is done to augment the application of flock on the top side of the turntable and to properly cover its edges.

To revolve the turntables, and at the same time cause a vibrating action which is so necessary in the proper application of flock, the flock booth has a vibrator bar. This metal bar extends along the conveyor the full width of the booth. It is located so that it contacts the under side of each turntable and lifts it on the conveyor spindle about 3/16-in. By means of a series of revolving cams, this bar is caused to vibrate at about 3600 times per minute. These vibrations not only cause the turntables to bounce, but they also cause them to revolve as they pass through the flocking booth. This violent action shakes off any excess flock that is not adhered to the surface.

The combination of sifting the flock onto the vibrating turntables, and spraying it on the face and especially around the edges, has proved to be highly successful. By sifting flock onto the large areas of the turntables, air from the spray gun does not have a tendency to dry the adhesive before the flock fibers become embedded into it. Flock sprayed from the gun covers the narrow edge and supplements application on the top side.

The flock-coated turntables then pass through a 4-ft. infra-red oven which dries the adhesive. They are allowed to cool and "set" from one to three hours before they are packed for shipment.

WOOD SANDING. When wood is to be stained, followed by filler if necessary, and then by clear finishes, it is important to sand the wood smoothly. Final polishing in the cabinet room should be with No. 5/0 sandpaper. A final touching up by hand just before staining will give a more uniform color. Then the sanded surfaces should be dusted off carefully with a brush and dusting gun, taking care to blow all sanding dust from the pores of open-grained woods. If this dust is not removed from the pores, the filler may not fill properly; it may shrink or it may turn gray.

If the sanding job is not satisfactory the stain will magnify and bring out every scratch and other imperfection in the surface. This condition will result in a spotty, uneven surface, instead of that even-toned color that brings out the natural beauty in the wood.—R. H. WAMPLER.

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Drying Behavior of VARNISHES ON WOOD

PART II

By Rollin H. Wampler
Author of Modern Organic Finishes

Last section of a two-part article that takes up the use of varnishes on wood surfaces. In this part the writer tells things of interest about the drying of different varnish finishes, and points out what accelerates and what slows up the drying of a varnish coat.

THE DRYING oil portion of a varnish base has a vital influence on the drying of a film of that coating. The hard resins used in oleoresinous varnishes dry solely by solvent evaporation. A solution of a hard resin will dry almost as quickly as lacquer, depending upon the solvent.

When a film of coating material has lost all of its solvent it has reached its final stage of hardness. The less oil in an oleoresinous varnish, the faster it will dry hard. The oil has only begun to dry when the solvent is gone. It must oxidize and polymerize to reach its final degree of hardness. A straight oil film may require days to reach its maximum hardness. Furniture varnishes therefore dry hard much faster than floor or spar varnishes.

Little Oil in Varnish May Cause Brittleness

The higher the melting point of a hard resin, the faster it will dry. The hard-drying oils, such as tung and oiticica, contribute to fast drying. Oleoresinous furniture varnishes are often made from hard resins and hard-drying oils for such characteristics as fast drying, reasonable hardness and print resistance, and satisfactory rubbing properties. It is dangerous to use too little oil, because the film will

be brittle and will crack upon aging, especially under the stresses of extreme and rapid temperature changes. The most durable rubbing varnishes will run from 12 to 15 gallons in length.

Alkyds Dry Best by Baking

In the case of alkyds, the shorter materials do not air-dry well. This is because the glyceryl phthalate complex, analogous to the hard resin in oleoresinous types, is a tough, plastic material, although somewhat brittle. Because of this difference in nature, a film of pure glyceryl phthalate is tacky and somewhat soft. It tends to retain solvents more than hard resins. Therefore the drying action of the oil portion of the alkyd must be relied upon to convert the material to a hard, tack-free film.

The pure alkyds must contain about 50% oil or more to air-dry satisfactorily. If some hard, brittle resin is present, then the oil content may be lower for satisfactory air-drying. Pure alkyds may be baked quickly, because the heat further polymerizes the glyceryl phthalate complex to a hard, tough mass. At the same time, heat helps to polymerize the oil portion. Since phthalic glyceride is thermosetting, a short alkyd is well adapted to baking.

Varnishes that Air Dry Satisfactorily

A short oleoresinous varnish, on the other hand, is better adapted to air drying because the hard resin portion is thermoplastic. For this reason furniture varnishes, which are of the shorter types, are rarely made on an alkyd base. Short alkyds set rapidly, but dry through poorly and do not rub well. The longer alkyds, on the other hand, usually air-dry better than the longer oleoresinous types because they have greater "functionality", or greater ability to form cross-linkages which convert the film to a hard mass.

Here again, because we are generalizing and simplifying, the reader is warned not to draw too fine conclusions from the picture we have sketched. Our deductions are accurate general rules only, with significant exceptions.

Much could be said about the drying action of oils. In general, the higher the degree of unsaturation, the better the drying. Satisfactory air drying occurs only if there are at least three conjugated double bonds linking the carbon atoms in the straight-chain fatty acid molecule. A conjugated double bond system consists of a double bond, a single bond, and another double bond in a row. Some oil acids even have four conjugated double bonds. Oxygen absorption occurs at double bonds. Direct cross-linkages between molecules can be set up by breaking double bonds. This is not the sole reason for the faster, harder drying action of some oils such as tung, oiticica, and dehydrated castor, but it plays a large part.

Heat, Air Circulation and Humidity Influence Drying

Now that we understand something of the composition and behavior of varnishes, we are in a better position to understand the overall mechanism of drying. Let

us now consider the external conditions that influence drying. These are temperature, air movement, and humidity.

Raising the temperature of a solvent increases the vapor pressure, and therefore speeds up evaporation. All finishers know that in hot weather a varnish will set to touch faster than in cold weather. The solvent retention of a varnish film is greater at low temperatures. At higher temperatures oxidation and polymerization proceed at a faster rate. Therefore a varnish or enamel will dry hard faster at higher temperatures.

Keep Heat Above 70°F, For Overnight Drying

Air-drying varnishes will not dry satisfactorily at temperatures below 70° F. The best range is 70° to 100° F. If the temperature of the finishing or drying room drops very much below 70° during the night, the drying will be virtually nil during the period of low temperature. Many furniture varnishes will air-dry well enough overnight to recoat or to rub, but not if the temperature falls too low. The habit of allowing the temperature to drop in the drying areas at night has cost some furniture manufacturers untold delay and trouble because of inadequate drying.

Some manufacturers of wood products have constructed special drying rooms which are operated at temperatures of 100° to 125° F., to insure trouble-free drying on schedule. While even the fastest furniture varnishes will not force-dry hard enough to be print-free or to rub thoroughly in just a few hours, overnight force-drying ovens for furniture varnshes have proved their worth in many factories. What has been said about furniture varnishes applies in even greater degree to longer-oil materials such as floor and spar varnishes, used on sporting goods and products for exterior exposure.

Air Circulation Needed To Aid Drying

Heat alone is really not sufficient for satisfactory drying. Still hot air is little better than still cold air. The air over the film soon becomes saturated with solvent vapors which retard further evaporation. It becomes cooled and depleted of oxygen. This layer of heavy, cool solvent-laden and oxygen-depleted air acts as a blanket which greatly retards drying. There must be a continuous, slow movement of air over the varnish to remove solvents and to bring heat and oxygen to the film. Proper drying requires air movement—provided either by mechanical means or by means of convection currents.

A properly designed drying room always requires means for complete air recirculation. In addition, some of the air—perhaps 5% or 10%—must be replaced by fresh air at every cycle. The air should be completely recirculated at least every few minutes. Obstructions to free air movement should be removed. Two vertical varnished surfaces an inch or two apart will often form a pocket of stale air that ordinary convection will not remove, since such air is heavy. During the working day open windows and doors and the action of

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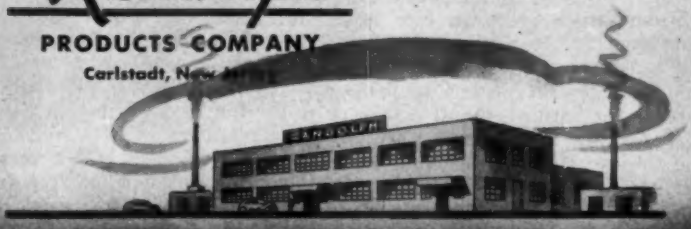

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spray booth exhaust fans will prevent such conditions near working areas, but at night conditions are quite different; and remember that the overnight period is twice as long as the working day.

High Humidity Slows Varnish Drying

Humidity is another factor that influences drying. Varnish drying is very slow on a damp, muggy day, particularly if it is cool. Raising the temperature of the room even a few degrees will reduce the relative humidity and increase the capacity of the air for solvents. Further, a little heat in the room will set up convection currents that help tremendously. Cracking the steam valve just a little on such days will make a lot of difference in the drying of varnishes and enamels.

Thickness of Film; Oil Content of Varnish

For every varnish and every set of conditions there is a film thickness that is best for perfect drying. The shorter oleoresinous varnishes can be applied heavier than the longer floor and spar types. The reason is because the oxidation and polymerization processes are less important to the drying of short-oil materials. Where a wet film thickness of one mil may be satisfactory for hard drying of a furniture varnish, for a longer varnish the thickness should be on the order of one-half to two-thirds of a mil.

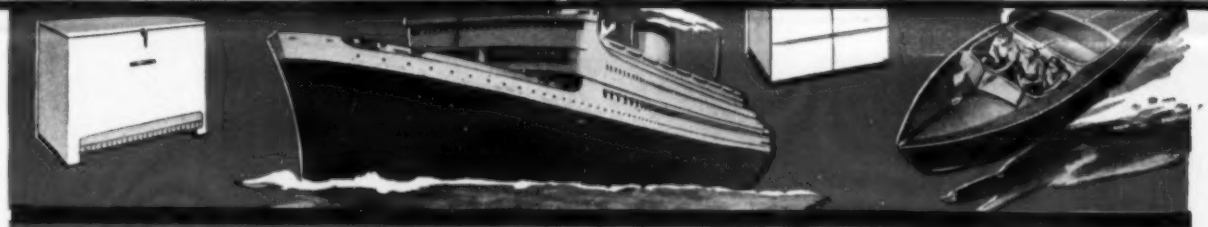
A 25-gallon varnish is about two-thirds oil, whereas a 12-gallon varnish is about one half oil. A 50-gallon varnish is about four-fifths oil. The longer the varnish, the thinner the film should be for satisfactory drying. The effects of driers reach a maximum, so that adding more drier will not compensate for a difference in oil content. Besides, large amounts of drier contribute to poor through drying, diminish durability, and lead to rapid embrittlement.

Too Much of "Good Thing" Can Ruin Finish

Penetrating varnishes, designed for complete absorption into the wood, present a different set of conditions. The material completely penetrates, and may be coated over as soon as the surface is in condition to scuff-sand, which may be in 30 to 60 minutes. There is enough air in the wood to complete the drying process in penetrating varnishes. The greater volume of wood is air anyway.

Many difficulties other than the obvious mechanical ones can be caused by poor drying. Sometimes a varnish film will check because the surface has set too fast from too much heat or too-rapid air movement. The surface becomes hard, but underneath the film is soft. The hard surface and soft substrate set up the right conditions for checking. This is especially true if the film is too thick. This case-hardening will as effectively retard through drying as will a very low temperature. Too much "top drier", especially cobalt, will cause case-hardening.

I have seen instances of brittleness caused by too-thick films and



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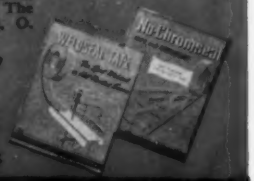

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poor drying conditions. The surface seemed hard and dry, but underneath the film was either soft or brittle. The film had set up too fast. When the underneath portion finally dried it had no opportunity to shrink down to a dense, uniform film. A porous, brittle film resulted. The same dry film thickness in two coats of the same varnish was much tougher.

Rubbing Trouble, Printing Due to Poor Drying

A furniture varnish must be dry enough when it is rubbed so that the rubbing oil will not soften it too much. Poor drying is the cause of the great majority of rubbing difficulties that occur in furniture plants where varnish is used.

Printing of varnish is usually caused by poor or inadequate drying. Stickiness, softness, and brittleness are often caused not so much by the composition of the varnish as by the unfavorable drying conditions. Lifting is sometimes caused by recoating an improperly dried varnish too soon, particularly if the varnish contains strong aromatic solvents such as xylol or high flash naphtha.

Piano Finish Trouble Traced to Source

The old-time furniture finishers, I believe, often had a better understanding of varnishes than many modern finishers because they used only varnish, and because the pressure of production was not so great in those days. I remember a true story one old-timer told me about something that he had experienced about 40 years ago. He was finishing pianos with a fine piano varnish. Each coat dried five days before it was recoated. The material was working perfectly.

Then one day it was discovered that many of the finished pianos showed large areas or streaks that appeared to be cloudy or translucent. Close examination disclosed the fact that each coat could be scaled off over these areas, one by one, until the stained and filled surface was reached. It was a case of separation or delamination of the coats. A long investigation finally located the trouble.

This happened in the days when the varnish maker was the only one in the varnish plant who knew the formulas. Not even the president and general manager in some plants knew them. It was finally discovered that the varnish maker who made this particular piano varnish arbitrarily decided there was too little drier in the product, so he increased the drier by about 50%. The varnish dried too hard by the time it was recoated, and so the next coat would not stick to it. In three days it was all right for recoating, but in five days it was too hard.

Well, that sort of thing is not likely to happen today because of the demands for high speed finishing, and because formulas are not changed in varnish plants today without due consideration of the effect in the customer's plant. The story is related to indicate the thorough understanding this old-time finisher had of varnishes, since he conducted the whole investigation himself, in cooperation with the

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varnish manufacturer. Untrained and uneducated by modern standards, by close observation and keen intelligence he tracked down the trouble. In these days of highly trained personnel, it makes one wonder if it is not true that, after all, wisdom and understanding are more important than much of the glib, assured talk that consists of half-digested scientific facts which too often pass for technical knowledge today.

Be Alert When Using Solvents

UNLABELED OR inadequately labeled containers of solvent are serious hazards, as was demonstrated recently when a field engineer mistook a jug of solvent for a water jug and drank from it. There were no indications of the nature of the contents on the jug which had been used to refill containers of solvent and then left on the shelf where the water jug was usually placed. The accident caused six weeks' disability.

Another source of accident is the substitution of one solvent for another without a change of labels on the container. The exchange of a flammable for a nonflammable solvent in this manner may result in fire. Such an accident occurred when a very flammable paint thinner was put on a rack in place of the solvent ordinarily used for cleaning purposes. The janitor did not know of the substitution and cleaned the floor around an electric motor with the paint thinner.

Drums of solvent obtained from the manufacturer are generally labeled with information which indicates whether the contents are flammable, toxic, or both, and gives the most important precautions to be observed. After the solvent is received in the plant, it is often poured from the original container into bottles, cans, jugs, etc., for distribution as needed. These smaller containers should have labels which duplicate the information on the original label. Otherwise, the safety information on the drum in the storage room will be of no use to the men handling the containers in the shop.

Solvents purchased from sources other than the manufacturer do not always carry precautionary information. In such instances, proper warning labels which may be obtained from the manufacturer should be put on the container before the solvent is put to use. — SAFETY RESEARCH INSTITUTE.

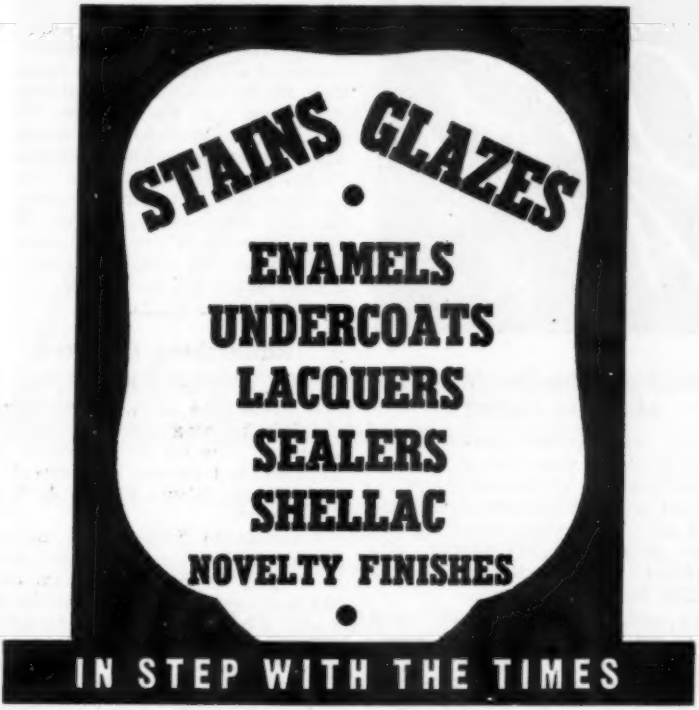
Color Selection Simplified by Optonic Color Compass

Answering a need for simplifying the selection and use of color in maintenance painting in industrial plants and institutions, a unique "color compass" has been developed by The Arco Co., Cleveland 4, Ohio and Los Angeles, Calif., originators of the Optonic Color System and pioneers of planned color application.

This novel, new color selection wheel, appropriately called the "Optonic Color Compass", is a handy aid for determining quickly and easily the proper shades of Optonic paints recommended to create better seeing conditions, greater plant safety, higher employee morale, and more efficient plant housekeeping. By operating the compass according to the directions given, eight different color schemes are shown—two each for rooms exposed to the north, south, east and west—which are used to secure these functional values.

Also given are scientifically sound selections of colors for controlling light reflectance accurately through application of specially formulated paints in rooms having a double exposure as well as in those areas where artificial lighting is the predominant means of illumination.

In addition, four successful color programs for painting a wide variety of occasional rooms are presented. Copies of this easy-to-use color selection and application guide are available on request to The Arco Co., 7301 Bessemer Ave., Cleveland 4, O., or 745 E. 59th St, Los Angeles, California.



Industrial Finishes
that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

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Rubbed Powder Makes Metallic Luster?

Some time ago we were watching some finishnig work being done in colored enamel. We noticed the painter used a material which he dusted upon the enamel after it had set, and when given a slight rubbing, this powdered material brought out a metallic luster or sheen.

We endeavored to find out what this powdered material was, but were unable to do so. We wondered whether or not you could give us any lead as to what it might be. We use enamel in finishing some parts that we manufacture, and we thought we would like to experiment with this powder in "breaking up" the finish on them. —M.R.Co.

Perhaps the enamel had some kind of metallic powders mixed into it when it was applied. Then, when the coated surfaces became dry, the finisher sprinkled polishing powder over the surface and followed up by rubbing the powdered surface to "bring out" the metallic luster.—Ed.

A man who has been investigating this for me says that some of his men have seen this done, but that they did not think much of the results obtained. According to his story, the enamel is allowed to set up slightly; then No. 40 grit powdered aluminum is sprayed over the surface. When dry it is polished with a sheepskin wheel, using a polishing compound. Probably copper or bronze powder could be used in the same manner to obtain a different color effect. It is barely possible to dust these powders on by hand, but spraying would give a more uniform job.—P.C.B.

Refinishing Grained Metal Doors

I would like to get information about refinishing metal doors and elevators. The job to be done on the premises and cannot be removed to the factory. Would like to do it in lacquer.

I intend to first remove the old finish with paint remover, then clean thoroughly with washing thinners. My next operation is the problem, for I need a buff ground color in order to grain them in a walnut finish. Lacquer ground color or primer will not adhere to metal, for it has a tendency to peel. What can I spray onto metal?

Then I grain by hand in water or oil color and spray two coats of clear lacquer which will be finally rubbed by hand with compound.

Can you inform me of the process of finishing they use on new elevators? Will greatly appreciate any information on this topic.

Also, is there anything to check red from bleeding besides shellac and aluminum?—P.J.

Regardless of what type of primeground coat you use, it is necessary to thoroughly wash the metal surface with mineral spirits after the old finish is removed. It is possible to obtain a lacquer base primer that will ad-

Filler

that wipes off clean and sharp

Stille-Young Spee-D-Dry Filler is the original fast drying filler. It's the perfect base for your lacquer, varnish or shellac finish.

Spee-D-Dry is easy to apply, easy to work. It may be brushed, sprayed or dipped. It wipes off clean and sharp above the wood pores, producing a perfectly filled and clean, smooth surface—without streaks or cloudiness.

Stille-Young has had a wealth of experience helping manufacturers in the selection, application and treatment of fillers. Why not take advantage of this technical know-how the next time you have a problem? Simply write, wire or phone Stille-Young.

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Chicago 14

here to clean metal surfaces, that is to say, the surface must not contain even a trace of the wax often found in some paint removers.

If you prefer to use something other than a lacquer prime-ground coat it is also possible to obtain an air-drying synthetic formulated to resist lacquer. This could be applied and, when thoroughly dry, the graining ink can be brushed on or applied with a cheesecloth pad, after which it can be hand grained with graining, touch-up and blending brushes. When dry, apply clear lacquer coats.

You might also consult your supplier regarding an all-synthetic finish, that is a synthetic prime-ground coat, graining ink and the top coat of clear synthetic finish—all air drying materials. It is possible to obtain synthetic materials which will dry rapidly without oven heat.

On new work the procedure is practically the same up to ground coat. The graining ink is applied to a copper plate etched with the grain design of walnut, mahogany or some other wood. The excess graining ink is scraped off with a squeegee. Next a clean rubber or composition roller is rolled over the inked copper plate, just one revolution. This roller picks up the graining ink from the copper plate. Then this roller is rolled (one revolution only) over the ground coat on the metal door or trim. The grain design is thus printed or transferred from the roller onto the ground coated metal surface. Some slight touching up by hand may be necessary, but not a great deal. After it is dry, a coat of clear synthetic is sprayed on and baked.

This method would be impractical outside the shop, even if air drying materials were used, unless the elevator doors could be taken down. For any transfer of wood grain to metal by the roller method, especially on fairly large surfaces, the surfaces to be grained should be in a horizontal position.

As to your second question, non-bleeding reds are available. On old work, where you cannot be sure of the type of red that was originally used, it is better to take it off entirely to be safe. Shellac will hold it out temporarily, perhaps a year, perhaps not so long, depending upon the strength of the red. Aluminum is slightly better, but neither could offer a guarantee to permanently stop red from bleeding through unless the red is a non-bleeding type of material. I know of no other coating that you could substitute for shellac or aluminum that would absolutely prevent bleeding.—P.C.B.

I suggest also that an automotive type lacquer primer be applied to the bare metal. This is not sanded. Then follow with the buff ground coat in 30 to 60 minutes. The primer, being a long, tough and adhesive coat, will bond almost any ground coat to the metal. Roller graining would not be practical for this job. Hand graining will be necessary.—R. H. WAMPLER.

"Corrosion Problem" Article

I would like to receive an additional copy of your September 1948 issue in which I remember there was an article entitled, "The Finish that Solved Our Corrosion Problem" (starting on pages 38-39). As I recall, this article referred to a finish made with metallic lead pigment (Metalead) in either a vinyl-type vehicle or chlorinated rubber.—M.B.S.

We are sending you a reprint of the article, "The Finish That Solved Our Corrosion Problem". If you wish an

Something New Has Been Added by Wilkinson

The new improved Golden Star Deluxe clear water and light amber burn-in shellac sticks are thoroughly engineered and tested for practical application to modern wood finishes—they have no equal on light finishes. Golden Star French polishing and touch-up materials are all of the finest quality. They are guaranteed and have been the standard of quality for over 40 years.

Why not mail us your order now for one of our complete sample kits of stick shellac. Regular price of this kit, $2.50, introductory price $1.75.

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This sample kit contains very small sticks to be used for selecting colors—$2.50 per kit.

Wilkinson Equipment & Supply Co.

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additional copy of the entire September 1948 issue for other purposes, please advise and we will send it.

The paint mentioned in this article is a specially-formulated chlorinated-rubber-base material. The user buys the metallic lead ground in oil and mixes 4-lbs. of the lead paste to each gallon of material. As the article states, it is necesary to keep the mixture in constant agitation from the time the lead is added until it is used.

I visited the plant of Worthington Pump & Machinery Corp., Holyoke, Mass., and wrote the article which was credited to Mr. Neuhoff who approved it before publication. If further information is desired, let me know and I will try to answer it.—P. C. BARDIN, Associate Editor.

Finishing Woods That Have Holly Inlay

I am wondering if you can give me any information on finishing furniture made of solid woods with inlay of another lighter wood?

We are making solid cherry and mahogany desks which have 1/28-in. hollywood inlay, and would like to know if it is possible to stain the cherry or mahogany without covering up the inlay. I have seen furniture on the market with inlay of that type, but we are at a loss to know just how to finish it.

On this furniture we have been using 1-oz. bicromate of potash to from one-half to one gallon of water. We find that by using potash to burn the mahogany or cherry to the desired color it does not turn or discolor the inlay to any great extent, but after we have put the potash on the piece of furniture, and should there be any sap or off-color places in the furniture, we find it impossible to get this off-color place blended in with the other parts of the desk due to the fact that the stain does not take effect on the wood on which we have used the potash.

Any information you can give us will be appreciated.—L.C.Co.

With regard to staining cherry and mahogany which have holly inlay, I believe it is practically impossible to prevent staining the holly without protecting it, that is, when using ordinary sains. Of course, the potassium dichromate will not stain it because its action is more specific on different woods.

I suggest that you consider using either non-grain-raising or water stain. Of course, you will have to protect the inlay, but that is not as difficult as it might seem. The old-time craftsmen simply brushed a little shellac over the inlay, but that was tedious and required a lot of care. The modern way is to use masking tape to protect the mahogany or cherry, and then spray a light coat of shellac over the inlay. After stripping off the masking tape, the surface is ready for staining. It really is a simple operation.

A further advantage of this procedure is that it permits local color control of sap or other off-color areas, while with the potash procedure the wood is so affected that it will not take the stain. This local color control by brushing or spraying is not difficult.—ROLLIN H. WAMPLER.

Quick Lacquer Repairs

In the May Questions & Answers, page 92, I noticed an item under the above title, wherein "F & S" were concerned about the problem of waiting for lacquer to dry where a place had been repaired on a finished surface. A number of prepartd padding lacquers and French polishing materials are on the market; one of these

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could be applied with a cloth with the result that the damaged spots could be repaired quickly and effectively by a skillful finisher.

If you are interested in the names of the companies who make these products, I will be glad to send the information.

Another method I have used successfully is to spot spray lacquer on the damaged place, being careful that the lacquer used is identical with that which was applied originally. After the spot patch has been sprayed with lacquer, use a rich lacquer thinner to thin out the spot and "melt out" the overspray.—JOE E. SMITH.

Light Reflection Night Signs

What kind of paint is used to make the signs that glow so brightly at night when automobile headlights shine on them?—L. M. Co.

One method of preparing the surface of signs that are to reflect light at night is to cover the light colored paint coating with tiny crystal glass spheres while the paint is still tacky (not yet dry).

The following information comes from a circular published by Flex-O-Lite Mfg. Co., St. Louis 3, Mo.

"Tiny crystal glass beads are not a novelty but a time-tested method of providing artificial illumination to signs, signals and markers. Only perfect glass spheres, however, give maximum clarity and brilliance.

"These beads are easily applied to almost any surface. They are simply sifted onto the area to be coated when the paint is in a tacky condition. They may also be imbedded in the paint coating by placing paper over the surface and lightly rolling same with a rubber roller. Any good exterior enamels (white, yellow and lighter tints are preferable), bulletin colors, sign and background enamels, silk-screen colors and clear bead adhesives may be used. Lacquers are not suitable for bead adhesive."

Honduras vs. African Mahogany

Referring to a question and answer under the above title, in May 1949 issue, page 92, I have been finishing both kinds of mahogany recently—rotary cut and sliced veneers—and haven't had any serious trouble. Here is the method we use:

First, be sure that all veneered panels and solid parts are glue-sized with a mixture made of one part heavy liquid glue to eight parts of warm water.

Second, we stain and then use a wash coat made of one part lacquer sealer mixed with five parts of lacquer thinner.

Third, we fill the surface with a filler made up in the proportion of 14-lbs. of filler to one gallon of naptha. This filler is padded in well with a coarse cloth or burlap, working across the grain. Then we "tow off" the surplus of filler across the grain and finally wipe the surface carefully with the grain, using clean, soft rags.

I feel sure that if each of these steps is taken in the order in which I have given them, your pin-holing and blistering trouble will disappear. —J. E. SMITH.

Norman Smith, Sales Manager for Capital Paint & Varnish

Norman Smith, who recently joined the sales staff of Capitol Paint & Varnish Works, Inc., Chicago, Ill., has been appointed sales manager of the firm. Mr. Smith will be in charge of both trade sales and industrial finishing. He joined the firm in Detroit and had many years of experience in paint sales, chiefly in the state of Michigan and the Detroit metropolitan area.

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YARNALL has consistently pioneered new Industrial Finishes . . . worked with manufacturers, experimenting, developing and improving finishes for metal, wood, and plastic. If you have a tough finishing problem chances are YARNALL can help.
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Dipping Machines

I have your letter of the 13th in regard to dipping machines. During the war and since then I have not manufactured any of these machines. At this time I am trying to get a reliable manufacturer to make an effort to get them on the market. As soon as this can be done I will write you.—George Stolze, Wausau, Wisc.

Wood Graining Equipment

I read the article on page 84 in April issue of INDUSTRIAL FINISHING magazine regarding wood graining, which is of great interest. I would appreciate receiving information on concerns who manufacture or supply equipment and supplies for wood graining.—D.M.

In a letter we are referring you to concerns that supply this equipment.—ED.

We Do Reclaiming of Paint Overspray

In the "Letters from Readers" section of May 1949 issue of INDUSTRIAL FINISHING, several inquiries were made on reclaiming paint sludge. We have been doing paint reclaiming for some time and would appreciate your referring inquiries of this type to us. If you desire further information for your records, we will forward it upon request.—ATECH, INC., 3800 Lagrange St., Toledo 12, Ohio.

You will recall that our paint reclaiming processes are used by all of the leading manufacturers of industrial finishes, therefore we are disappointed to find ourselves omitted as a possible source of information in your reply to inquiries in May 1949 issue of this magazine (page 88). We would like to remind you that we offer free advisory service to paint consumers on any problems connected with recovery and reclaiming of paint overspray. We are also in a position to reclaim paint experimentally on a laboratory scale or on a production basis.—INDUSTRIAL COATING ENGINEERS, 2272 National Bank Bldg., Detroit 26, Mich.

Who Makes that Air Meter?

In the "Random Comment" for April, an page 4, we noticed an item about an air-meter known as "anemotherm". Please advise us where we can obtain further information about this.—L. Metal Prod.

On page 4 of the April issue, mention is made of a new device that records air velocity, air temperature and static pressure readings. We are interested in obtaining this piece of equipment. Will you kindly put us in contact with the manufacturer so that we can secure additional information?—T.Y.Co.

Contact the manufacturer, Anemostat Corp. of America, 10 E. 39th St., New York, N.Y.—ED.

Finishing Zippers

Kindly send by return mail tear sheet from May 1948 issue of INDUSTRIAL FINISHING, pages 100 and 102, on the subject of "Enameling Zipper Chains", as mentioned on page 84 of April 1949 INDUSTRIAL FINISHING.

We would like to express our praise for your fine publication, INDUSTRIAL FINISHING. It is an indispensable aid to the finisher.—S.F.C.

I was very much interested in the article published in your May 1948 issue in reference to finishing zippers and the processes described. I wonder if it would be possible for you to give me the man's name who wrote the article, as I would like to contact him personally about some of the points brought up in this article.—J. K. Gamble, Research Dept., Talon, Inc.

Information supplied.—ED.

Japanese Sea Grass

Can you furnish us with the name or names of possible suppliers of Japanese Sea Grass for wiping of filler?—C. Wood Products Co.

Sorry, we don't know. Can some reader help us on this?—ED.

Whose Degreaser Is It?

In 1947 we purchased a degreaser from the Mid-Western Sales Co. whose address at that time was 175 Fifth Ave., New York, N.Y. Recently we tried to contact this company and the letter was returned

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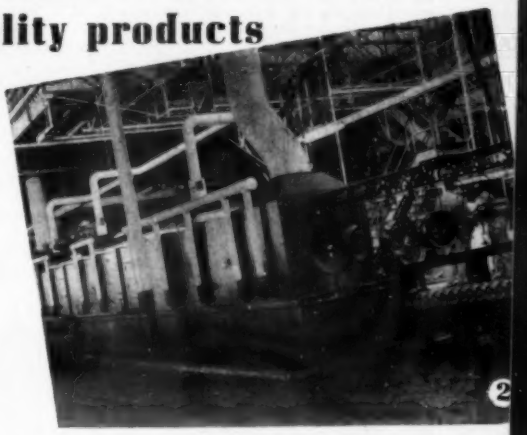

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stating there was no forwarding address. Could you please tell us if this company is still in business and if so, give us their address? This information will be appreciated.—P.E.S.

We believe that Mid-Western Sales Co. is now called Optimus Equipment Co., 149 Water St., Matawan, N.J.—ED.

Measuring Thickness of Paint Film

We understand that a device is available for measuring the thickness of a paint film on a finished surface (sheet steel in our case) without destroying the paint film or injuring it in any way.

Since we feel we might have use for such a device, but have no detailed information regarding its nature or possible sources of supply, we would appreciate receiving any information you might be able to give us along these lines.—P.B.Co.

Try Henry A. Gardner Laboratory, Inc., Bethesda 14, Maryland.—ED.

Who Makes Equipment for Gasket-Process Finishing?

We will appreciate any information you can give us on manufacturers of equipment for the extrusion or gasket process of finishing, as used on broom handles, poles, etc.—G.R.Co.

Sorry, we do not know. Can some reader help us on this?—ED.

Lead Pencil Finishing

We have received an inquiry from a lead pencil manufacturer who is concerned with the cost of applying several coats of lacquer to each pencil and with the drying period required between lacquer coats. He inquires if there are any recent developments, such as a quick-drying enamel or lacquer which would produce the same finish with fewer coats, or some type of straight plastic covering.

A search of technical literature has revealed the development of organosols and plastisols but makes no mention of their application to pencil finishing. We are wondering whether you may know of any such development applying directly to this manufacturing process.—TECHNICAL INFORMATION SERVICE.

Several advertisers in this magazine can supply materials that would probably serve your client's purpose. (In a letter we are naming a few of them.) As we see it the lead pencil manufacturer's problem is to find a suitable means of application. We believe that for such a heavy coating, the logical method of application would be by vertical dipping, with controlled, steady, uniform, slow withdrawal of pencils from the enamel.—ED.

Dry Stain Process

We understand that there is a dry stain in use at the present time for coloring novelties. This stain is in a powder form, tumbled on dry. If you can give us any information as to manufacturers of such an item, we would greatly appreciate it.—M.S. & D. Co.

We are pleased to refer you to Lehwood Corp., 1793 Ironwood Drive, South Bend 14, Ind.—ED.

Electrostatic Spraying

Please advise if copies of INDUSTRIAL FINISHING for May 1946 and August 1947 are available. One of our customers is interested in electrostatic spraying. In the event the issues mentioned are not available, please send tear sheets of the articles. We will be glad to pay for this service.

Please accept our thanks and compliments on your fine magazine.—E. L. Co.

Tear sheets of these articles are being sent to you. Further information on this subject can be secured by communicating with the Ransburg Electro-Coating Corp., Indianapolis 7, Ind.—ED.

Finishing Engineer-Consultant Ready in Minneapolis

On page 82 of April 1949 edition, we noticed that you have an inquiry for a finishing consultant in Minneapolis. We believe that we could help this customer in selecting equipment and laying out his finishing operations, and we would appreciate it if you would either pass our name on to him or advise us of his identity.—Hayden Engineering Co. (Industrial Heating Equipment).

In a letter we are identifying the source from which this inquiry came.—ED.

Acid-Proof, Alkali-Proof Paints and Resistants

Our friends, Boki Seizo Co. Ltd., maker of rayon spinning machinery, wish to get hold of above mentioned coatings to be used on various parts of their machinery.

In several parts of the plant the materials Bakelite and Ebonite are used, but they have inadequate strength to stand high speed rotation or rough handling, and for this reason the company wishes to use aluminum as a substitute.

Metal Plate surfaced with FLOCK makes AM-FM-TV Numerals easy to read

Here, where metal was essential but glare undesirable, the manufacturer found that a coating of sprayed-on Flock solved the problem — concentrated the illumination — eliminated reflections — and clearly accentuated the various numeral settings. Claremont Flock is ideal for such applications—more economical than laminated linings — easier and cleaner to handle — and permanent. For finishing, insulation, bolstering, etc., Claremont Flock's instant availability makes it most desirable for general industrial purposes. Write for samples and details.

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Dial Back Plate flocked by Testcraft Products Co., Inc. of 14 Delancey St., N. Y. 2. for Andrea Television Model TVK-127 manufactured by Andrea Radio Corp., Long Island City, N. Y.

CLAREMONT WASTE MFG., CO.

CLAREMONT, NEW HAMPSHIRE

The only problem is the coating that will withstand acid and also acid and alkali baths in succession. We would appreciate it if you can put us in contact with a reliable maker of this kind of coating—Hanshin Trading Co., Ltd., Kobe, Japan.

In a letter we are naming manufacturers who can probably supply what you need.—ED.

We Are Engineer-Consultants for New Finishing Setups

We have noted in the April "Letters from Readers" page 82, an item entitled, "Engineer-Consultants for New Finishing Setup", this being in reference to a Minneapolis manufacturer who is planning to go into the prefabricated housing business and wants complete information about finishing operations.

We would like to learn who this Minneapolis manufacturer is, as we are thoroughly familiar with the problems involved, having recently installed production equipment for Lustron at Columbus, Ohio, who is one of the largest manufacturers of prefabricated houses in the United States.—DESPATCH OVEN CO.

Information supplied.—ED.

Finish for Wooden Dishes

Would you kindly tell me what finishes are suitable for use on wooden dishes used to serve food, for example, steak trays, salad bowls, etc?—F.A.

Several advertisers in this magazine can supply what you need. In a letter we are naming four or five of them.—ED.

Klem Chemicals Appoints an Assistant Sales Manager

Mr. J. M. O'Brien has been appointed Assistant Sales Manager of Klem Chemicals, Inc., Dearborn, Mich. Mr. O'Brien was formerly Southwestern Manager for another concern. He has more than 11 years of experience in the chemical cleaning fields. He will assist Mr. A. J. Pettit, General Sales Manager, in the company's plans for further expansion in industrial metal cleaning, as well as in other industries not previously covered.

Klem Chemicals has served the metal industries for several years, during which time the firm has gained considerable prominence in the metal cleaning field, due to the products it has developed and the prompt and efficient technical service given to customers.

Bauer and Santoro Advanced by Standard Varnish Works

M. H. Corbin, President of Standard Varnish Works, has announced the appointment of Carl Bauer as Manager of Industrial Sales, and W. E. Santoro as Director of Laboratories of Standard Varnish Works of New York.

Carl Bauer, a graduate Chemical Engineer, started with the Company as a chemist, later becoming Director of Research and then Director of Laboratories. In addition to his contributions to the development of industrial finishes, he has lately been increasingly active in Standard's sales and sales development. In January, 1949 he was made a Director of Standard Varnish Works of New York.

Mr. Bauer has been active in the finishing industry for many years and has contributed technical articles to various publications. He is a member of the American Chemical Society and The Paint & Varnish Production Club of New York.

Carl Bauer and W. E. Santoro.

W. E. Santoro came with Standard Varnish Works in 1939, to take charge of the Company's Metal Decorating Division. He has had many years of experience in the paint and varnish industry and has made numerous contributions to the technological advancement of the industry.

Mr. Santoro is Chairman of the Membership Committee of The Paint & Varnish Production Club of New York, a member of American Society of Testing Methods, a Fellow of The American Institute of Chemists, a Charter member of the Forest Products Research Society, and a member of the American Oil Chemists Society.

Protection from Corrosion

Dennis Chemical Co., 2701 Papin St., St. Louis 3, Mo., has published a 4-page folder entitled "Perma-Skin Vinyl Corrosion Resistant Protective Coatings."

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In today's highly competitive market, it is significant that the plant with Richards-Wilcox Conveying Equipment operates more efficiently, more profitably.

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R-W continuous power conveyors are serving production and processing lines in every imaginable industry . . . increasing efficiency, cutting costs. Let us prove to you how R-W Power-Driven Conveying Equipment can quickly step up efficiency and profits in your plant. Telephone, write, or wire the nearest office of Richards-Wilcox, world's largest makers of power conveyors and door hardware.

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AURORA, ILLINOIS, U.S.A.

Random Comment on the Industrial Scene

(Continued from page 6)

employees to "think safety". In a large measure, they can also be helpful in enlightening workers who do not fully understand te reasons for certain safeguards or safe practices.

* * *

Speed-Dry Enamels. Commercial availability of a new class of resins, promising wide usefulness in the manufacture of surface coatings, is announced by Bakelite Corporation. The resins are oil modified styrene copolymer solutions and are designated as Bakelite "C-10" Resins. Two types are currently available.

Enamel finishes that air-dry as fast as lacquers can be made from Bakelite "C-10" Resin BJS-502. They are already being used for toys and farm implements where it is an advantage to be able to handle such items eight to 10 minutes after spray application.

Baking-type enamels based on BJS-502 are useful in meeting short baking cycles; for example, 30 minutes at 250° F., 20 minutes at 300° F., etc.

* * *

Need for New Ideas. Dr. I. M. Kolthoff, a Dutch chemist and professor of chemistry at the University of Minnesota told a group meeting of the American Chemical Society, that analytical chemistry is in danger of deteriorating to a "cook book" routine unless new discoveries of the properties of matter are assimilated into standard techniques.

He urged scientists to continue to search for new principles and to apply them to existing methods promptly.

This excellent advice applies not only to scientists, but to men in industry. We cannot stand still. We cannot depend on the old and tried methods and materials. Better, faster and more economical ways of doing most jobs are developing. Many different kinds of materials are available. Finding the better way and material lifts us out of the cook book routine.

* * *

Broken Fluorescent Lamp Peril. More thoughtful attention is being centered on ways and means to combat the danger of berryllium poisoning from shattered fluorescent tube lamps. The deadly poison is contained in the phosphor, the white material on the inside of the tube. Danger of poisoning lies in either inhaling the white dust when a tube is shattered, or from a cut by the broken glass of the tube.

* * *

Is It Clean? Monsanto Chemical Co. scientists are using radioactive chemicals to determine "how clean is clean" in experiments evaluating the company's synthetic detergents as metal cleaners.

The new method utilizes C-14, an atomic energy by-product which emits beta rays, or electrons. It can detect traces of soil beyond the sensitivity of even the most refined of present methods which depend on physical measurements.

* * *

Coated Paper Food Containers. A new container for milk, making possible a saving of more than 90% in shipping space, is one of the innovations shown by Bakelite Corp. at the National Packaging Exposition in Atlantic City.

Developed and manufactured by Sealright Co., Inc., Fulton, N.Y., the new Sealking container is made by using tasteless, ordorless and non-

toxic vinylite resins to coat rolls of paper, from which containers are die-cut in the flat.

Shipped to dairies in this flat manner, the blanks are fed into equipment that automatically forms, sterilizes and fills the containers in a single operation. The final fabricating is made possible by taking advantage of the thermoplastic characteristics of the vinylite resins through heat sealing.

* * *

Dust Free Tester. To determine when a paint film is dust free, a tester has been developed. It is a simple device consisting of a container built like a salt shaker and filled with calcium carbonate. A uniform deposit of dust is deposited over a test panel at regular intervals. When the dust no longer adheres to the painted surface, it can be considered dust free.

* * *

Safety Light. There is available a new safety device that provides instant, automatic light when the regular source of light is interrupted. When the current is restored, the emergency light is automatically turned off. The device includes batteries and fluorescent tube.

This device should prove advantageous in boiler or engine rooms, exit stairs and in fire-fighting equipment stations.

* * *

Packaging. Concerns that use packages or cartons for shipping their products are looking for higher quality packaging and specially designed containers. Reason for this trend is that selling is more competitive and manufacturers believe they need more attractive packages to assist their sales effort. Others believe that better packages will save them money by reducing returns and damage claims.

you'll never know
how much
you can save
by using
"LIQUID ENVELOPE"
PEELABLE
SPRAY-BOOTH
COATING
until you
take advantage
of this
test sample
offer

5 gallons shipped on a
money-back guarantee $13.75
Attractive low price on quantity re-orders.

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127 E. 7th ST., LOS ANGELES 14, CAL.
IN CANADA: HUGH RUSSEL & SONS, LTD.
MONTREAL AND TORONTO

Paint Heater and Viscosity Control; Recirculating

Development of a new, improved viscosity control paint-heating and recirculating system is announced by the Industrial Sales Co., 455 South Fair Oaks Ave., Pasadena, Calif. Named "Vicon", the new unit maintains uniform viscosity of all types of paint materials by constant temperature control. It is designed for use with spray painting systems, and is installed between the pressure material tank or gravity-feed system and the spray gun.

Vicon viscosity control, paint heating and recirculating equipment for finishing rooms.

Vicon is a positive temperature regulating unit, designed to control paint viscosity . . . the viscosity is reduced by raising its temperature. This, Vicon accomplishes in its hermetically sealed and evacuated heat exchanger, which contains a buffer fluid, eliminating water level maintenance. It is capable of heating all paints and finishes to any predetermined temperature between 100° F. and 200° F. Variable heat loss, often experienced when using long material hose or when spraying intermittently, is prevented by the addition to the heater of a recirculating system which constantly circulates the material through the hose.

The Vicon Paint Heater is a portable unit mounted on a caster base ready for connection to the pressure tank, spray gun and power outlet. A maximum of 15 minutes is required for preheating. The motor is explosion proof, and all wiring, switches and controls are vapor proof.

The unit is approved by the Board of Building and Safety Commissioners of the City of Los Angeles and the Board of Fire Commissioners of the City of Los Angeles, Approval Number LAFC 1681-48.

Cleaning Compounds for Aluminum Stampings

A cleaning bath which is effective on aluminum parts that are heavily coated with polishing composition, especially in recessed areas, is announced by Northwest Chemical Co., 9310 Roselawn Ave., Detroit 4, Mich. Complete removal of the soil without scrubbing is accomplished by processing the work through this bath com-

posed of from 2-oz. to 4-oz. per gallon of "Alkalume" No. 1, plus 2% by volume of Liquid Stripper No. 2 for a period of from two to five minutes at 160° to 190° F., depending upon the transfer time; followed by a thorough rinse of the free flowing or spray type. This is preliminary to the conventional painting or anodizing cycle.

Automatic Gas Detector

The Lor-Ann Combustible Gas Detector and Safety Controller for plant protection has been approved by the Underwriters' Laboratories and the Associated Factory Mutual Fire Insurance Co.

In operation, the gas detector continually samples and analyzes plant atmosphere where combustible gas accumulations produce an ever present but hidden fire or explosive hazard. When gas accumulation approaches a dangerous volume, an automatic alarm, both audible and visible, is given and at the same time the Lor-Ann automatically takes over control of the plant's operating machinery, fire-fighting system, ventilation system, or both, depending upon the plant's particular protection needs.

The alarm point setting is variable and can be set from 20% to 100% of the lower explosive limit for any given gas. A wide-spread meter gives a constant reading of gas concentrations. The Lor-Ann operates on 110 volts 60 cycles and is provided with a 3-wire grounded neutral protective system.

In addition to the automatic gas warning signals the Lor-Ann is fitted with a separate fool-proof signalling system to indicate both visibly and audibly of any failure of the instrument to operate, thus making doubly sure of safe operation. It is manufactured by Lor-Ann Instrument Co., Inc., 58 Montgomery St., Jersey City, New Jersey.

Let The ARIDIFIER

CLEAN YOUR AIR AND GAS LINES

Removes 92% Oil, Water and Dirt

The Aridifier gives you positive removal of oil, moisture and other foreign matter from air or gas lines. With paints and lacquers it often eliminates bloom and imperfections in finish. It provides dry lines for ceramics, sand blasting, for air cleaning, etc. Wherever the need exists for *dry* clean air or gas, the Aridifier delivers the goods. Easily installed. No maintenance problem. 10 models available. Capacity range: As low as 7 CFM to 17,000 CFM.

BULLETIN 147 Tells The Complete Story

HOW IT WORKS Exploded view shows how four multi blade rotors revolve at high speed in opposite directions under impact of air movement through non-aligned rotor spaces. Moisture, dirt and other foreign matter which collect on rotor blades are thrown out of air stream by centrifugal force to side of housing, and pass into drain.

Made By The Manufacturers of Logan Lathes and Shapers.

Logan ENGINEERING CO.

4915 W. LAWRENCE AVE., CHICAGO 30, ILL.

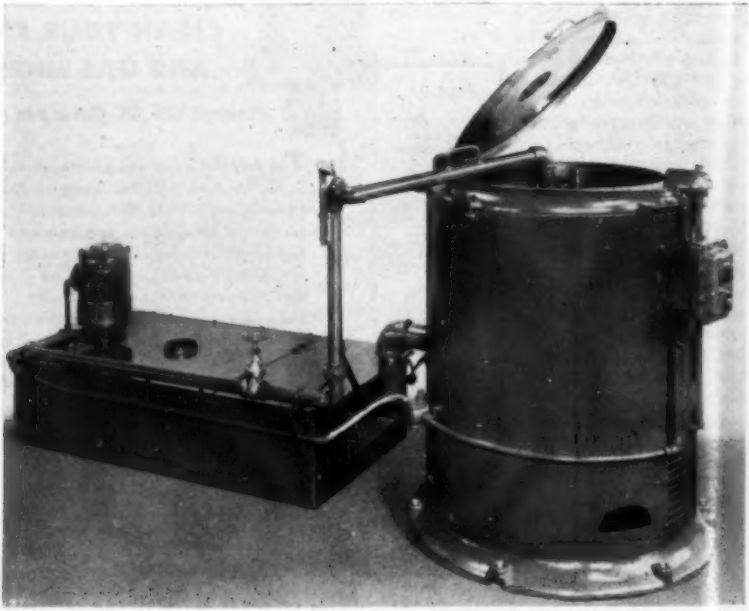
Centrifugal Filwhirl Enameler

The Barrett Centrifugal Filwhirl Enameler, made by Leon J. Barrett Co., Worcester, Mass., is the result of long experimentation and development. By this Filwhirl method the enamel is driven into every crack and crevice of the article being painted, thereby producing a durable finish. With this process the parts to be painted are placed in a closed bowl which has a fairly tight fitting cover; the bowl is filled with enamel.

When rotation is started, the outflow on enamel from the bowl and parts is restricted to a sufficient extent to cause a hydrostatic pressure to be built up against the parts by the enamel. This pressure forces the coating material into every exposed pore of the surface of the article with a considerable degree of pressure.

Then, as the speed of rotation is increased, the parts are centrifugally drained to remove all excess enamel, leaving an even coat. The thickness of this coat can be controlled by the elapsed time of spinning. The average time required for a complete load is usually 10 to 20 seconds.

The machine is powered by a Barrett built-in, high-torgue head which provides quick acceleration to the speed and force required. The machine has a removable liner to permit ease of cleaning. It is possible to change liners in a few minutes so



No. 402-J enameling machine, product of L. J. Barrett Co., maker of centrifugal machinery.

GEHNRICH
"Vertical Loop"
CONTINUOUS CONVEYOR OVENS

Handle Large Volume of Production Automatically in Less Time with Much Less Labor

Write for Catalog 117

Gehnrich "vertical loop" conveyor oven for automatic dipping, draining and baking enameled auto horns. Recirculation heating assures clean, uniform baking. Work returns under oven to loading point for removal by man who also loads new work on flight bars. The process may also include preliminary cleaning or washing and drying in the same automatic conveying system.

W. S. ROCKWELL CO.

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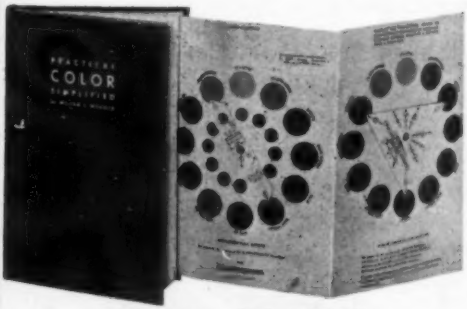
PRACTICAL COLOR SIMPLIFIED



A Handbook for everyone interested in or using Color. Contains many Tables, Color Plates and the Miskella Patented Color Chart. Just revised and reissued in a Limited Edition after many urgent requests from among 5000 users of previous editions in all parts of the world. Answers those vexing color questions which come up every day—the little technical puzzlers that bother. Contains a wealth of valuable information written in understandable form so all may understand.

The Patented Miskella Color Chart enables you to mechanically select colors, mix shades and tints, harmonize three or more colors and avoid color discords. Securely fastened in back of book. Colors are hand applied with lacquer on cloth not easily damaged by frequent handling. On it are mounted, pivoted celluloid arrow and triangle. This Chart is worth alone the price of the entire book!

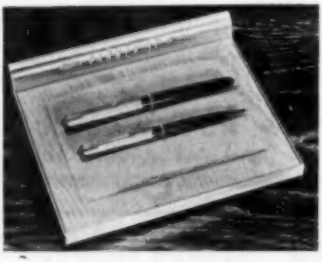
128 Pages. Price $5.00

INDUSTRIAL FINISHING, 1142 N. Meridian, Indianapolis 4, Ind.

HOW . . .

Cellusuede FLOCK SOLVED A PROBLEM

PROBLEM: Finish fountain pen displays with a coating that will emphasize the salient features of the merchandise being shown.



SOLUTION: Rayon Cellusuede Flock — with its eye-catching, velvet-like effect — produced a vibrant background complementary to this particular merchandise.

How About You?

Perhaps you have a similar job at hand. If so, let us work closely with you as we did with Harve Ferrill & Co., Chicago, designers and creators of the Parker "51" pen display illustrated. *Remember Cellusuede Flock for functional and decorative coatings.*

Send for Samples, Prices, Literature

CP

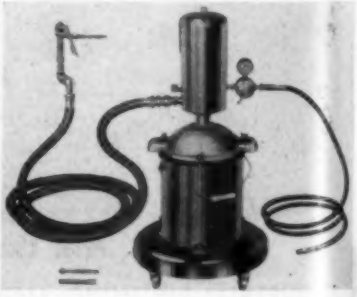
Cellusuede Products, Inc.
ROCKFORD, ILLINOIS

that different colors can be run without contamination. A supply tank and pump can be furnished with the equipment.

In operation the work is placed in a removable basket and set into the closed bowl or work container in the machine. A swinging supply pipe is lowered and enamel is pumped in, under push-button control, until the bowl is full. This floods the work with enamel. The top lid of the machine is lowered and the machine is started and allowed to run the prescribed length of time until all excess enamel has been removed. If desired, the machine can be run in the reverse direction to remove excess paint from pieces having blind holes. After the enamel leaves the bowl is flows into the liner and then back to the supply tank through the pipe at the rear of the machine.

Graco Pump Applies Heavy Materials

A heavy duty, air-operated Powerflo Pump, for pumping industrial fluids and semi-fluids from original 5-gallon containers, is made by Gray Company, Inc., Graco Square, Minneapolis 13, Minn. Special feature of this Powerflo Pump is a new type



Pumps heavy materials right from container.

Positive action of BARRETT TYPHOON CENTRIFUGAL WASHERS provides for quick, thorough parts cleansing

In these efficient centrifugal machines the washing solution enters the top of the whirling load under valve control. The operating principle—being that of a typhoon—gives the washing solution a spraying, swirling, and surging action which thoroughly permeates the contents. During this action, centrifugal force creates hydrostatic pressure within the work container. That proportion of the deluge going to the bottom is forced up the side and out carrying off the contaminated fluid.

A thorough, quick cleaning is definitely assured by flowing sequence. Two or more liquids may follow, making it possible to wash, rinse or provide any further treatment as required.

Several Barrett installations involve the use of four machines operated by one man who loads and unloads in three minute cycles. Washing time is only one minute. Another type of set-up provides for recovering oil, washing, drying, and coating with rust-proofing material.

As in all Barrett Centrifugal machines, provision is made for convenience and safety of operation.

Send at once for details of Barrett Typhoon Washer

THE LEON J. BARRETT COMPANY
Designers and Builders of Centrifugal Machinery
1703 GRAFTON ROAD WORCESTER 1, MASS.

I. C. D. FORMULA NINE

NON-INFLAMMABLE « *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

EASY TO APPLY—NO AFTER CLEANING

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings from any surface or material . . costs less to use . . saves time, labor and material.

BRUSH CLEANER I. C. D.— non-inflammable brush cleaner works fast . . does not injure nor loosen the bristles. Easy to use . . leaves the bristles clean as a whistle. Order a gallon can and convince yourself.

ORDER TRIAL GALLON AT DRUM PRICE

INDUSTRIAL CHEMICAL DEVELOPMENT CORP.
347 MADISON AVE. NEW YORK 17, N. Y.

follower plate which utilizes the weight of the pump to insure positive priming at all times. The follower plate also prevents waste by forcing all material out of the container.

The new Graco Powerflo Pump handles gun-grade calking compounds, gun-grade putty, semi-fluid adhesives, sealers, and other industrial materials of similar consistency. The pump has a pressure ratio of 4½ to 1, with a double-acting piston to assure continuous flow of material.

Material can be applied directly to the work surface from this one-man operated pump or transferred to hand guns. Air compressor capable of delivering 5-cfm. at a minimum of 150-lbs. pressure will operate the pump. A 15-ft. material hose of ¾-in. I.D. terminates in a full-capacity flow gun with jumbo-size universal swivel. Three interchangeable nozzles are furnished for the flow gun.

Spray Guns Announced by Stewart-Warner

Three new models of spray guns for use with Alemite "Versatal" materials are announced by the Alemite Division of Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Illinois.

According to Damond P. Woodlee, in charge of Versatal pump sales, the three new spray guns, collectively, will handle hundreds of types of materials presently being used by industry, from thin liquids to heavy mastics. This includes materials containing high percentage of silica sand and such highly abrasive materials as sand-base sound deadeners and sand or mica insulating materials.

Features of the three new spray guns are enumerated by Alemite engineers as follows:

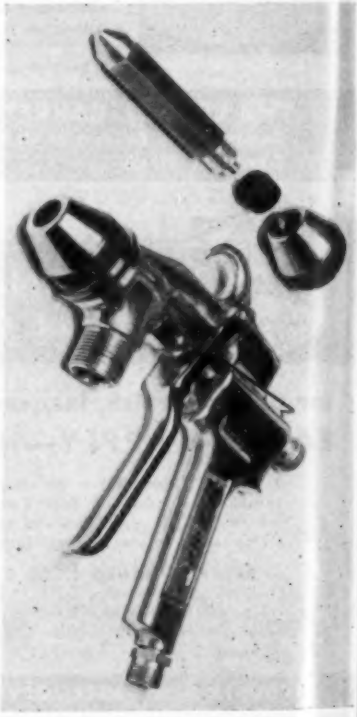
1) One-piece, drop-forged aluminum body, with ¾-in. material inlet.

2) Fluid tip made of stainless steel, with funnel-shaped interior which prevents packing or clogging of high solids content materials.

3) Air-cap made of hardened and nickel-plated steel, designed for in-and-out adjustment to change the particle break-up size of atomization.

4) Steel locking ring, holding air-cap in perfect adjustment.

5) Shut-off needle made of hardened, stainless steel, with an adjustable collar which allows operator to compensate for wear. *(To page 112)*



Model 7815-A Alemite Versatal Spray Gun.

RONCI SPEEDIP WHIRL ENAMELER

Made in Two Sizes, R-100 and R-200 Capacity 312-cu.in. and 1206-cu.in.

IDEAL FOR LACQUERING AND ENAMELING SMALL PARTS UP TO 7-IN. IN LENGTH

CUTS COSTS, SAVES UP TO 80% OF MATERIAL

Carries up to 75-lbs. per load, and up to 30 loads per hour can be coated with lacquer or enamel in these machines.

All operations are within the machine. Dipping tank is raised, submerging the parts in the basket, and then lowered and the parts whirled, throwing off excess material. No additional outside tanks required; no cleaning necessary when changing colors; no loss of material.

PROMPT DELIVERIES

Write for further information and submit samples to be coated.

RONCI MACHINE COMPANY

A Division of F. Ronci Co., Inc.

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BOOKS On Finishing Available

"MODERN ORGANIC FINISHES—Their Application to Industrial Products" (452 pages) New	$8.50
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"FURNITURE FINISHING" (543 pages)	4.00
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"THE MIXING OF COLORS AND PAINTS" (292 Pages)	2.50
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"NATIONAL PAINT DICTIONARY" (704 pages)	7.50
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"PRACTICAL COLOR SIMPLIFIED" (128 Pages)	5.00
"GRAINING"—Ancient and Modern (224 Pages)	4.00

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▶ Removes paints, enamels, synthetics and wrinkles almost instantly. You can see the finish literally "pop off". Only one operation required. Refinish immediately.

▶ Non-injurious to hands or metal.

Write for sample and quotations, or order 5 gallons at drum price.

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Rayon & Cotton Flock • Flocked Paper
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PRODUCTS
Flocking Machines • Equipment • Adhesives

AT LAST! A full line of Flock and Synthetic Flocking Adhesives in Matching Colors!

• 12 COLORS TO CHOOSE FROM •
• WHITE • BLUE • MAROON • ORANGE
• BLACK • GREEN • SILVER • YELLOW GOLD
• RED • LT. YELLOW • SUNTAN • BROWN

SPECIAL SAMPLE OFFER!
1 Lb. Flosco Rayon Flock
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Only $3.65 plus postage
Your Choice of Color

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6) Length of needle pull can be adjusted with a trigger stop to control natural flow while gun is in operation.

7) Air plunger and ball check made of stainless steel, easily removed for cleaning or replacement.

8) Trigger is of the 4-finger type and is nickel-plated. It provides excellent balance by centering weight of gun on top of index finger and base of thumb.

9) There is a trigger latch which holds trigger in open position but can be released instantly during operation by either right or left-handed operator. This eliminates operator fatigue on large areas.

10) Air velocity regulator is built in, and velocity of air can be altered without interrupting operation of gun.

Kits for repair and maintenance of the new guns in the field are available. They contain replacements for all wearing parts as well as service instructions.

Heat Resistant Coatings for Metal Surfaces

Lowebco, Inc., 1525 E. 53rd St., Chicago 15, Ill., announces a new type, heavy duty, lustrous, long-wearing, rust-resistant coating for finishing, protecting and decorating the exposed parts of machines, motors and other products to be sold to consumers. The free-flowing coating is touch-dry in 30 minutes, forming a durable glossy finish that does not scale, crack, check or "dust" off. It can be sprayed or brushed on. The new coating is moisture repellent and highly resistant to corrosive acids, caustic soaps and extremes of heat and cold.

"Oncrete" holds its colors fast and bright. Its rust-and-abrasion resistant qualities fit it for many manufacturing purposes. The new coating resists heat up to 500° F.

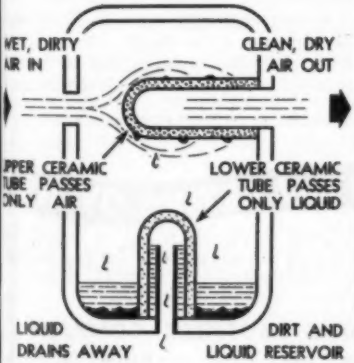
Lubricates Conveyor Automatically

A simplified self-contained grease lubricator for conveyors—one of the type that requires no external power for its operation and is driven by contact with the trolley wheels—is announced by J. N. Fauver Co., Inc., 49 W. Hancock, Detroit 1, Mich. It is identified as Model 304. Features include a transparent plastic reservoir which performs dual duty of liquid level guage, and a quick release lever for taking the lubricator out of service.

Cleans Compressed Air

Water and water-oil emulsions are removed automatically and continuously from compressed air lines by the newly designed Liqui-jector, a product of Selas Corp. of America, Erie Ave. and D St., Philadelphia 34, Penna.

The equipment is utilized in precision pneumatic operations that require positive conditioning of compressed air. Phase separation and liquid ejection are accomplished by two ceramic tubes; one is water-re-


WET, DIRTY AIR IN
CLEAN, DRY AIR OUT
UPPER CERAMIC TUBE PASSES ONLY AIR
LOWER CERAMIC TUBE PASSES ONLY LIQUID
LIQUID DRAINS AWAY
DIRT AND LIQUID RESERVOIR

Showing operation of the two ceramic tubes.

GLOBE BRANDS

BRONZE POWDERS . . .
all shades and grades for various purposes

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ALUMINUM POWDERS AND PASTES

•

GOLD, SILVER, COMPOSITION AND ALUMINUM LEAF

B. F. DRAKENFELD & CO., INC.
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Your partner in Solving Bronze Powder Problems

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NEW
SILICONE-BASE HEAT RESISTANT FINISH

MICO Aluminum hailed by leading manufacturers as the most heat-stable finish ever to be developed for every day commercial use.

NOW—a heat resistant finish that protects—*virtually doubles the life*—of vital parts in hundreds of products like mufflers, engines, boilers, ovens, oil and gas burners. MICO Aluminum has passed 25 different tests for thermal, chemical, and physical stability, and has thoroughly proved itself on the production line. *Investigate* MICO. *Get the facts!* Write today for your copy of the new MICO folder . . .

MICO . . . THE SILICONE BASE FINISH THAT WITHSTANDS 1000° (F.)—WITHOUT SURFACE BREAKDOWN.

Manufactured Exclusively by
MIDLAND INDUSTRIAL FINISHES COMPANY
Dept. IF-6 Waukegan, Illinois
ENAMELS • SYNTHETICS • LACQUERS • VARNISHES

Safeguard your spray booths

• Layers of inflammable paint come off more quickly if you have applied Wyandotte Spray Booth Coating first. Only a thin coating makes cleaning easier, faster, more economical.

Your Wyandotte Representative will be glad to give you complete details on Wyandotte Spray Booth Coating. Why not call him today?

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FOR ALL FINE FINISHES

TAC-ALL TACK RAGS

Packed bulk or individually.
Prices and samples on request.

GEO. W. RENNER CO.
2309 Lillie St., Ft. Wayne 5, Ind.

pellent, the other is water-permeable but air-impervious. Compressed air passes through the first tube where it is stripped of its aqueous contamination and dirt. Moisture drops to the bottom and drains through the second tube without loss of air. The water ejection rates for the three sizes of equipment vary from .5 to 2.5 gallons per 24 hours.

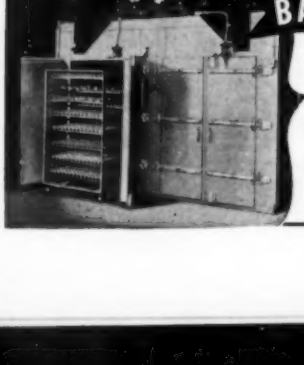
The Liqui-jector acts also as a filter, removing atmospheric dirt and finely divided solid particles, even finer than 100 microns in diameter.

The housing of the Liqui-jector is cast bronze. There are no moving parts, traps, cocks, or shutoffs. Maintenance is limited to periodic inspection and removal of accumulated dirt.

"Permafil" Seals Porous Metal Castings

A new liquid resin for sealing porous, light metal castings is announced by the General Electric Co.'s Chemical Dept., Pittsfield, Mass. The new material, called G-E Permafil, was developed to permit foundries to salvage castings which would otherwise be rejected because of porosity, and to permit their use on applications involving oil or vapor pressures.

A polyester-type resin, G-E Permafil converts to a tough, clear, solid, free of voids, through the action of catalysts and heat. Castings are



BAKING and DRYING OVENS

For Processing • Varnish Baking • Paint and Lacquer Drying • Lithographing and Decorating. Batch or Conveyor Types for any fuel. Write for Bulletin 3.

YOUNG BROTHERS COMPANY
2011 Park Ave. Detroit 26, Mich.
Established 1896

sealed by vacuum impregnation and a subsequent short oven bake. G-E Permafil is said to have good storage life under recommended conditions.

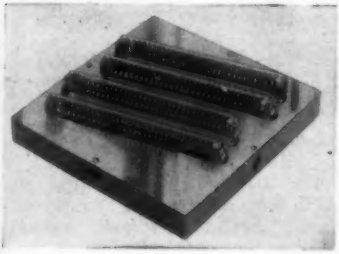
Electric Heat Without Infra-Red Lamps

The Miskella Infra-Red Co., East 73rd and Grand Ave., Cleveland 4, Ohio, has brought out insulated Spir-O-Therm units which are interchangeable with the company's insulated infra-red lamp units.

According to Miskella's illustrated circular, features of the new units are:

1) Costs lower than lamp or strip heater equipment.

2) Higher efficiency than any type of strip heater.



Miskella's Spir-O-Therm (Lampless) Units.

3) Diagonal positioning eliminates hot spots and hot streaks existant in horizontal 90° lamp set-ups. Directs heat uniformly on product moving past on a conveyor.

4) Construction. Pyrex tubes with spiral channel resistors, stainless steel contacts and stainless steel reflector.

5) An exclusive Miskella insulation feature, prevents the terrific heat loss in other forms of resistance heating equipment.

6) Practically no transmission losses due to the novel channel construction of the resistance alloy used.

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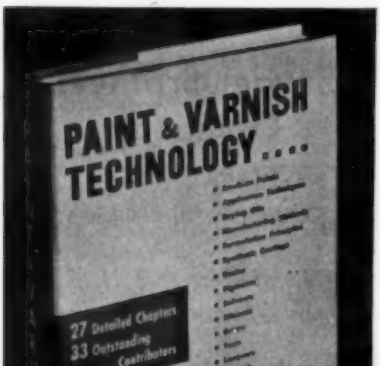

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This is the first comprehensive one-volume presentation of the chemistry, formulation, manufacture and applications of paints, varnishes, lacquers and enamels. There is a wealth of information on such subjects as exposure tests, viscosity, film properties, hiding power, special applications and surface preparations. A valuable addition to your personal library. Send for it NOW!

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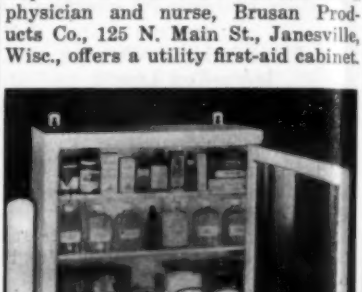
Handy First-Aid Cabinet

For industrial plants too small to require the full time services of a physician and nurse, Brusan Products Co., 125 N. Main St., Janesville, Wisc., offers a utility first-aid cabinet.



Everything needed for first-aid treatment.

The *Deluxe* unit, fulfilling every first aid requirement contains 58 items; the *Regular* unit, somewhat smaller, is stocked with 45 items. Cabinets are made of steel, finished in white. Either size cabinets may be had without supplies.

Self-Washing Air Filters

New automatic, self-washing air filters are announced by Farr Co., 2615 Southwest Drive, Los Angeles, Calif. Units consist of banks of standard 20x20x4-in. Far-air filters inclined 30° toward the air flow. They are available in a variety of sizes to meet any air requirements.

A series of automatically controlled water and oil nozzles on the entering air side of the filters periodically

wash and recoil the filter media. A constant displacement pump, controlled by the timer, operates at the proper speed to deliver correct amounts of oil according to the number of filters in the bank. Once the cleaning and oiling interval is set on the controls, no further attention to the unit is necessary.

Rotating Paint Mixer

For moving, mixing or agitating finishing materials in containers (one gallon round cans to 55-gallon drums) the Morse Mfg. Co., 122 Dickerson, Syracuse, N.Y., announces the "Rotator" shown in the illustration. This is a portable, motorized drum cradle truck having a ½-hp. motor which furnishtes sufficient power to rotate a full drum load at a speed of 10-rpm.

Swivel casters at the front end are easily retracted by means of a foot lever at rear end of truck to prevent slippage of truck in loading, and they make steering easy in moving a capacity load of 500-lbs. from one location to another.

Up-ends, moves and rotates drums.

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PLASCOTE NO. 1
The new peelable plastic boothcoating.

- Actual using reports prove Plascote No. 1 will cut booth cleaning time in half.
- It is applied quickly and easily by use of ordinary paint spray equipment, or by brushing.
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Order 5 gallons, at the drum price of $1.95 gallon.

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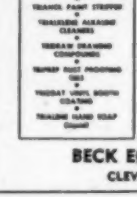

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Time tested—job tried. Nalco Infra-red lamps have proven highly efficient and long-lasting for all types of drying, baking or heating installations . . self reflecting or clear glass type.

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North American Elec. Lamp Co.
1030 Tyler St. St. Louis 6, Mo.

Air-Dry Plastic Finish Has Remarkable Features

L. Sonneborn Sons, Inc., 80 Eighth Ave., New York 11, N.Y., recently introduced a new plastic finish called "Phenoplast". Phenoplast is a liquid finish which not only coats the surface but becomes practically an integral part of the material to which it is applied. Its secret lies in a catalyst which, when added to a phenolic resin base, produces Phenoplast.

Phenoplast is applied like varnish and renders the coated object wellnigh damage proof. Used like glue, it becomes an almost inseparable "joiner", so that wood or metal so welded stay put through wind, weather, temperature changes and almost any amount of wear and tear.

According to L. Sonneborn Sons, Inc., Phenoplast gives woods, metals, steel, tile, masonite and composition materials a surface protection that will resist the ravages of alcohol, exposure to flame, penetrating ink blobs and most acids. The coating also has remarkable resistance to abrasion and wear.

Phenoplast's high resistance makes it possible to withstand temperatures from far below zero right up to the boiling point and higher. Unaffected by practically every acid and chemical solvent, as well as water, gasoline,

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oils, alkalies, salt spray and strong brines, it penetrates and hardens as a physical part of a porous surface. With a companion undercoat, this same adhesive quality can be given to non-porous surfaces, even to glass.

Spill-Proof Acid Container

A new closed-type unbreakable container for carrying acids, alkalis and other corrosive solutions, without danger of spilling, is available in 1, 3, and 5-gallon sizes.

The manufacturer, Automotive Rubber Co., Inc., 8601 Epworth Blvd., Detroit 4, Mich., advises that the new container has a perforated steel shell sandwiched between 1/8-in. coatings of seamless rubber or synthetics according to need.

Inner and outer coatings are tied through the perforations for permanent adherence and leave no metal exposed. Both carrying and tipping handles are covered, and rubber stoppers for top and spout are included.

New Basic Color Book

A lavishly illustrated book on color, with color charts, color harmony, color theory, etc., and containing more than illustrations, of which 155 are in color, is announced by Paul Theobald & Co., 5 North Wabash Ave., Chicago 2, Ill. The book has 224 pages 8½x11-in., with valuable appendix and extensive bibliography. Price, $14.75.

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COLD STRIPPER

- Cleanly and quickly removes all paints, enamels, synthetics or wrinkles. The finish literally "pops off."
- Permits refinishing in minutes—not hours. Especially effective on hard-to-remove baked-type finishes.
- Non-inflammable. Non-injurious.

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Industrial FINISHING Editorial

Spend Money to Attract Buyers

Are you among those who have noticed that customers and prospective buyers seem to be less eager to order large quantities of your products at any price you name? In other words, have you noticed that there seems to be fewer customers and those who do buy are more critical of certain features of your products, including particularly the appearance, utility, durability, finish and perhaps the price of those products? Then you are faced with a "buyers' market"; in other words, a pre-war-boom market when concerns who made products to sell exerted every effort at their command to attract prospective buyers—doing all they could to make their customers perfectly satisfied with the product and the service. That's what conditions call for today. It's the 1949 score.

Cheaper goods at cut-rate prices is not the answer. Quality goods at prices based upon all of the economies a manufacturer can possibly put into his business—this is the object to strive for. Improvement in quality of the product may have to start with a redesigning job to effect greater simplicity, added usefulness and better appearance. This may call for the services of a competent designer.

Real quality in the materials of which the product is made is a "must" in everything but cheap goods which so often end up as distress merchandise. Durability and attractiveness in the finish are necessary features too. The "feel" of the surface and its general eye appeal are factors of too great importance to be entrusted to just anybody's idea. An experienced designer can be as valuable here as a good lawyer in some important court action.

The possibilities for finding where economies can be effected in plant operation are almost unlimited. To mention a few: The selection, purchase, storage and requisitioning of raw materials and supplies; tooling up the plant for production and operating it at a minimum of wastage in labor, materials and supplies; maintaining harmony throughout the organization; adequate inspection to maintain quality workmanship and reduce rejects to a minimum; and finally, packaging the goods so well that they arrive at point of destination in perfect condition.

Put More Sales Appeal Into Your Products

A short time ago Q. Forrest Walker, economist for Macy's in New York told members of the American Marketing Association:

"There is still a vast range of opportunity to improve quality, eye-appeal and utility of our merchandise, often with little or no substantial addition to cost. We do not always take full advantage of possibilities of color, or we do not use it effectively. Many good products fail to sell because they lack functional design, or because they overemphasize this to the detriment of other appeals."

Proof of the wisdom of these words may be found in observing nearly any

product used in the home or office and comparing it with the same product 25 to 50 years ago. Take any item from a padlock to a perambulator, or from a telephone to a top hat; there is more styling, more eye-appeal and more real utility. There is less material, less weight, less bulk and fewer manhours required to produce it.

The future holds equal if not greater opportunity for advancement and promise. There is still plenty of room for improvement, regardless of what the product may be. Improvement will not come through just wishing, or hoping or thinking. These must come first to provide the tools for the work of practical application.

Valuable Reference Data on Finishing

Some time ago the plant engineer of a large Eastern industrial firm paid us a nice compliment. Underneath this compliment there is such a good idea that we feel inclined to pass it on to you.

When we asked this engineer how he liked INDUSTRIAL FINISHING Magazine he replied, "Like it fine. Of course no publication can cover all of the subjects and answer all of the problems that naturally come up in any particular plant; but taken over a period of time, you manage to cover most of them that pertain to product finishing.

"I think enough of it to subscribe for an extra copy which is used for clipping service. The other copy remains intact in our library. We have an indexed, looseleaf scrap book, broken down into subjects such as, airlines, air compressors, air filters, conveyors, spray booths, paint heaters, surface treatment, primers, lacquers, enamels, ovens, sanding, etc. Long and short articles and short write-ups on these various subjects are clipped and inserted under the proper heading in the scrap book.

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Finishing Foremen

NEW — DIFFERENT

STAR NU GLO

PATCHING STICKS

#100 Pale Transparent
Melts Out Water White
Easy Flowing

A completely new material developed after years of research into patching problems. Unaffected by alcohol or modern finishes. Will not pull out while sanding. Also manufactured in 20 popular colors. Write for sample. Dept. CW

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The Miskella standardized line now includes: Vibra-Veyor, Duplex-Veyor, Save-in-Kit, Knock-Kit, Test-Kit, Barrel-Kit, "Tub" Oven, Pull-Thru Oven, Elliptical Oven, Knock Tub, Hy-Heat Units, Super-Heat Units, Low-Heat Units, Turbo-Veyor, Chain-Veyor, Belt-Veyor, Coil Veyor, Heat-O-Lier and Attic Oven.

Perhaps only a part of an article will be clipped on a certain subject. In such cases the issue date is inserted on the scrap book page so that at some future time, anyone can look up the entire article in the permanent file. This plan has worked successfully many times in helping us to solve a difficult problem.

"These scrap books are made available to paint foremen, the superintendent, engineering staff and laboratory people. I got the idea from a scrap book habit I had when I was a kid."

Many readers haven't the time or inclination to carry out the scrap book program, but it is more than worthwhile to keep a file of all back copies of the magazine for quick future reference. Many articles published years ago are still timely and of value in conenction with present day methods of production.

Crack Filler for Wood Finishers

In production finishing, repair and refinishing operations, the finisher often needs a dependable repair material for filling small and large cracks, nail holes, dents and gouged places. What he needs is something that will adhere permanently to the wood, will become hard when dry, will not shrink to any extent, can be smoothed down after it dries, will take the same stains and finishes that are applied to adjoining wood surfaces, and will be as weatherproof and waterproof as any finished solid wood.

Fortunately, repair materials that have these characteristics are now available. They can be obtained in wood colors, in small airtight cans or tubes.

SILK SCREEN METHODS of REPRODUCTION

Fully Illustrated by the Author. Leatherette Binding. size 5x7½ in. 193 Pages. 98 Illus..... $3.00

THIS new book is intended for Sign Painters, Card Writers, Display Men, Furniture Manufacturers, Novelty Manufacturers, Glass Etchers and For Domestic Use.

Every detail of the silk screen process is presented clearly in detail. All equipment is fully described and its use illustrated. All materials needed in the various kinds of silk screen work are mentioned with respect to their use to advantage. Estimates of costs and prices to charge are given.

INDUSTRIAL FINISHING MAGAZINE

1142 N. Meridian St. Indianapolis 4, Ind.

Beckwith, Research Director for Rinshed Mason

Newell P. Beckwith has been appointed Director of Research of the Rinshed Mason Co., Detroit manufacturer of automotive, industrial and architectural finishes. Mr. Beckwith's duties will include complete supervision of all laboratory and field research in the company's paint, varnish, lacquer and enamel divisions. He is 34 and has been active with Rinshed Mason since 1939. The war interrupted his work, and after five years of army service, he was discharged in 1946 with the rank of Lieutenant-Colonel.

Newell P. Beckwith will supervise laboratory and field research for the Rinshed-Mason Co.

Mr. Beckwith is active in Detroit and national paint association circles and particularly in the industry's efforts toward the development of technically trained men. He is Chairman of the Joint Committee on Education of the National Paint, Varnish & Lacquer Association.

C. J. Rood Represents Binks Mfg. Co. in Indiana

Binks Mfg. Co. (Spray Equipment) announces the appointment of C. J. Rood as the company's Factory Sales & Service representative in Indiana, with headquarters at 117 E. Michigan St., Indianapolis 4, Ind.

Mr. Rood's years of experience with the Binks Mfg. Co. fully qualify him as a competent source of information and service for Binks customers in his territory. From his own experience and with that of the firm's engineering department, he will be of assistance to customers in producing better finishes, faster and at lower costs. He can also help in the layout of finishing departments and the selection of equipment for specific purposes.

Egyptian Lacquer Mfg. Co. Appoints Two Vice-Presidents

Mr. O. J. S. deBrun, president of The Egyptian Lacquer Mfg. Co., announces the appointment of Mr Edward B Bradshaw as vice-president in charge of the South Kearny, N.J. plant of the company.

Mr. Nils O. Bolin was appointed vice-president in charge of Egyptian's new midwestern plant in Lafayette, Ind.

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PAINT OVENS • RUBBER CURING OVENS • AIR HEATERS • ETC.

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It is an entirely new book, complete in every detail. Each formula is new and different. Not one formula contained in the previous seven volumes is repeated in this book.

From thermoplastic adhesives to insecticides, from leather dressings to vegetable preservatives, from invisible inks to refractories, from anti-freeze solutions to metal finishes—this valuable book describes and explains the latest commercial methods and processes.

It will keep you up-to-date with the newest developments and trends. It will bring you a great fund of ideas, information, data and formulae that would otherwise be accessible only after consulting dozens of books.

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Rubber & Latex	Furs	Animal Remedies	Skins	Marking Compositions
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Lubricants	Bleaches	Pharmaceuticals	Textiles	Waterproofing
Drugs	Ceramics	Oils & Fats	Fibres	Metals
Farm & Garden Specialties	Deodorants	Liquors	Beverages	Alloys
Resins	Disinfectants	Dyeing & Coloring	Flavors	Glues
Cements & Concrete	Laundry Specialties	Fluxes	Rustproofing	Pastes
Synthetic Resins	Dental Products	Explosives	Metal Treatments	Fireworks
Plating	Etching	Paints	Food Products	Waxes
Pyrotechnics	Fireproofing	Lacquers	Enamels	Mildew Proofing
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INDUSTRIAL FINISHING Magazine

1142 North Meridian Street **Indianapolis 4, Ind**

How to Kill Off Real Enterprise

WE HAD A baseball league here in Birdland, but it broke up last year. A few teams in the league were hitting it just right, the rooters were flocking to their games, they were making money and the players were getting fat pay envelopes.

One team in the league, the Sparrows, were all left-wingers and they didn't have a chirp on the ball. They were always tail-enders; the rooters didn't roost in their bleachers; the team took in little at the gate; the players weren't worth much and they got paid in kind.

Last year, when the season got underway, the Sparrows, as usual, were down in the chimney, and so the left-wingers began to squawk. They were working as many hours as the top-flight teams and they wanted the same pay. "But we don't get the crowds," said the club owner. "We can't afford to pay you as much as the clubs that are getting the big gates."

"We play as many innings as the leading teams, and so we should get as much money," argued the left-wingers. "There's an unequal and an unfair distribution of rooters in Birdland. We demand our share of the fans. Ration the rooters in equal numbers to each ball park so that we will have equality at the gate."

The club owner argued that this wouldn't work, but the left-wingers won the argument. The baseball commission ruled that prices would be the same at all ball parks; that the rooters would have to stop flocking to the winning teams' games and go in equal numbers to the games of the tail-enders.

And so the left-wingers got more pay and the winning team cut salaries to share the gate. Pretty soon the winning teams began to lose en-

BEFORE YOU SPRAY
USE
Crystal
TACK RAG
Industrial size 18 x 36
WILL NOT SMOKE NOR
GENERATE HEAT WHEN STORED
IN A WARM PLACE
Always Soft and Tacky

Exclusively Processed by
Baughn Chemical Products Co.
7027 North Ravenswood Avenue
CHICAGO 26, U. S. A.

It's the latest

A New
BOOK on
HAND
GRAINING

224 Pages, 6x9-in.
Illustrated

Its contents are conveniently divided into 50 chapters—all about the art of hand graining to reproduce the exact grain, figure and color of variously-cut cabinet woods. All of the information is thorough, practical, easily understood and interesting. The book is bound in stiff red covers and lettered in gold.

PRICE, $4.00 POSTPAID

Industrial Finishing
1142 N. Meridian St., Indianapolis 4, Ind.

NATIONAL PAINT DICTIONARY

New Edition Ready

$7.50

The long-awaited revision of the National Paint Dictionary is now ready for distribution. This is the third edition by its author, Jeffrey R. Stewart. The size of the book has been reduced to 6x9-in. to meet popular demand, and to facilitate its use in a standard library shelf. The number of pages has been increased from 216 to 704, and n type face has been used which provides maximum legibility.

The terms included in this dictionary may be divided into six categories (though the largest proportion falls into the first two groups) as follows: 1) industrial raw materials used in the production of paints and allied products; 2) trade names of raw materials and certain finished products; 3) terms describing processes, methods, systems, etc.; 4) terms denoting scientific instruments used primarily for evaluation purposes; 5) terms denoting colors, optical effects, textures, etc., and 6) miscellaneous terms which give general information to the reader, jargon expressions peculiar to the industry, etc.

Copies of this new reference book are priced at $7.50 each, cash with order.

★

INDUSTRIAL FINISHING

1142 N. Meridian St., Indianapolis 4, Ind.

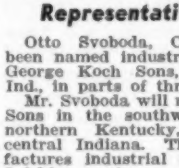
thusiasm; they played so listlessly that even the lowly Sparrows beat them; rooters stayed away; the teams played to empty bleachers and the league broke up.

You can't pull up those on the bottom by pulling down those on the top.—Wisely yours, OLLIE THE OWL.

Svoboda Is George Koch Sons Representative in Midwest

Otto Svoboda, Cincinnati, Ohio, has been named industrial representative for George Koch Sons, Inc., of Evansville, Ind., in parts of three midwest states.

Mr. Svoboda will represent George Koch Sons in the southwest quarter of Ohio, northern Kentucky, and part of east central Indiana. The Koch firm manufactures industrial ovens, new furniture finishing systems, and many metalcraft products.



Otto Svoboda represents Koch in parts of Ohio, Indiana, Kentucky.

While employed by another firm, Mr. Svoboda, as special sales engineer, adapted and sold the first known DeBurg assembly conveyor and handled new special applications of conveyors. Business address in Cincinnati is 5629 Madison Ave.

Black Arrow Representative for California

The appointment of Herman H. Hobelmann as Factory Representative for the Black Arrow Line of paint spray equipment in the Northern California area, is announced by The Black Mfg. Co., Parkton, Md. Hobelmann, now well known as a manufacturer's representative servicing Northern California's automotive and industrial supply houses, and paint specialty houses, was formerly western district manager for another concern. His address is 420 Market St., San Francisco.

Filling Mahogany

THE FILLING of mahogany wood seems to present a problem for some companies—also, for a number of finishers. Most of the trouble is due to the unsatisfactory cleaning up of the wood in the white; in other woods, the sanding. In some factories the general rule is to get it off the assembly line with the least possible expense and pass it on to the finisher about half sanded. If the finisher is bullied into taking it in this condition, he is in for trouble. With the proper sanding, mahogany veneered and solid wood surfaces are easy to fill.

If the grain is not raised too much, the veneered panels may be belt sanded with No. 3/0 (120) grit sandpaper and polished with No. 5/0 (180) grit sand belt. Otherwise use No. 2/0 (120) and No. 5/0 (220).

After the belt sanding and polishing, an application of thin glue sizing will produce a nice clean surface and prevent the fibers from raising later.

After the surfaces have been stained the wash coat will need attention. When it is dry this should be sanded entirely smooth all over—not just over the easy places. Too little attention is given to detail in this operation and, as a result, some places show up rough and fuzzy after filling. Also, the filler will be hard to wipe clean.

Carefully and thoroughly sanding the sealer coat is another operation that is sadly neglected. Sanding the dry sealer coat to a smooth surface will help make the rubbing job easier and more effective by giving a smoother finished surface, void of ripples and orange peel—providing, of course, that the top coats are of real quality material. First class sealer sanding is really necessary when the finisher is using urea-alkyd top coats.

"Wood Graining"

ADDS

Eye Appeal

American Graining Plates are photographic reproductions of fine woods.

AMERICAN RICHWOOD PRODUCTS CO.

Graining Plate Division

104 E. Mason St., Milwaukee 2, Wis.

IDEAL TACK RAGS

FOR A PERFECT FINISH

Immediate Delivery

IDEAL CHEMICAL COMPANY

1689 Lee Road Cleveland 18, Ohio

Using 9-lbs. of filler to the gallon of reducer produces an excellent filling job on mahogany, if the surface is right—and excessive padding-in is unnecessary.—FRED BOYNTON.

New Wrinkles in Finishing

A new 8-page circular 8½x11-in. entitled, "Making Money with New Wrinkles in Finishing", contains up-to-date authoritative facts on: What is wrinkle finish? How many coats; Preparation and application; Baking; Pine tree finish; Colors; Metallic effects; Flexible wrinkles; "Dip-spray" process; Air drying of wrinkles.

Free copies of this valuable circular can be obtained by writing New Wrinkle, Inc., Suite 1819 Bankers Bldg., 105 W. Adams St., Chicago 3, Ill.

SEA-LAC

HARDY WRINKLE

with a

LASTING TWINKLE

You're sure of uniformity of design, color and sheen when it's a Duralac wrinkle. Good oven hold out. No distortion of pattern. Shrugs off shocks, bumps and abrasions of day-in and day-out use and wear. In short, to be sure — use a Duralac wrinkle.

Write for sample

DURALAC CHEMICAL CORP.

84 LISTER AVE., NEWARK 5, N. J.

Wilkinson Equip. & Supply Co. Handles Golden Star Products

The Wilkinson Equipment & Supply Co., 6958 S. Wentworth, Chicago, 21, Ill., has been appointed General Distributor of Golden Star Polish Mfg Co.'s industrial finishing products in the Midwest territory. This concern is equipped to service all cabinet and furniture manufacturers on french polishing, patching and industrial finishing products in Indiana, Wisconsin, Michigan and part of Ohio.

This firm has in stock a complete line of Golden Star stick shellac, deluxe lacquer sticks, aniline stains, blending stains, Golden Star specialized french polishing products, etc., for immediate delivery and service to the furniture trade.

Spray Painting School

Intensive training at the DeVilbiss Spray Painting School in Toledo, Ohio, is available without charge to industrial finishers operating DeVilbiss spray equipment. Courses of one week duration will take up on the following dates: July 25, August 22, September 26, October 31, November 28, and December 19. Lectures, demonstrations and actual practice will be devoted to latest methods and techniques of spray application. All interested persons should write well in advance for registration.

New Paint & Lacquer Company Established in St. Louis

Hercules Paint & Lacquer Co., Inc., has been recently established as a processor of paint and lacquer for industrial finishes. The firm now occupies a building at 8054 Manchester Road, St. Louis 17, Mo., containing 3000-sq. ft. of floor space. The firm will begin production about July 1 and will employ about five or six persons at that time. A. J. Spanogle is president of the firm and was formerly associated with Sterling Lacquer Mfg. Co.

Are you the Right Man?

The right man is an experienced finishes salesman with established business. There are good territories open with a liberal drawing account and commissions for a producer.

Our products, principally lacquers and synthetics, have established sales acceptance in a highly competitive market. Are you the right man? Write ABLON FINISHES, Inc., 84 Waydell St., Newark 5, N. J.

Controlling Free Air in Spray Rooms

FOR SMOOTH dust-free finishing, as well as for safety in any adjoining ovens, the free air that gently moves through a spray-painting room must be reasonably well balanced as to intake versus outgo. In other words, the ventilation system needs to be so balanced that the same quantity of air is being removed from the room, by exhaust fans in spray booths, as is being let into the room through filters. In some modern setups the air entering the spray room is blown in from the outside by ventilating fans, but it is blown through filters to make sure that it is clean—and, of course, the current of incoming air is dispersed in such a way that it enters the room gently over a reasonably large area.

After one day's spraying with certain types of finishes, we may find a different condition in the spray booth. A slight build-up of material may have occurred at the deflector plate above the manifold; also there may be a build-up on the water curtain due to forgetting to sweep it down at lunch period; drying oils coming to the surface of paint particles may have caused paint particles to stick to the steel, thereby leaving a base for excessive build-up, and some slight deposit may be on the eliminator plates. All of these deposits of overspray interfere with the efficiency of the exhaust fan and, of course, if more spray guns are used in the booth, that means that more air must be exhausted.

The conditions just mentioned can eventually result in the air supply system putting more free air into the spray room than the exhaust fans are removing. The excess air must go somewhere, so it travels out of the booth and out of the room—perhaps through the conveyor openings. This excess air is also carrying overspray which will leave a dust coat on the incoming work, resulting in rough finishes and rejects. Any overspray that may enter the oven or the section leading to the oven is a fire hazard and should be carefully watched.

Over a period of a week it may be necessary to readjust the air supply several times to keep overspray inside the booth and properly exhausted. A simple way to check the direction of air flow in a room is as follows: While production is in full swing, with all spray guns operating, stand by the conveyor opening and remove the cork from a smoke vial (cigarette smoking is too dangerous). The thin whisp of smoke issuing from the nonflammable liquid in the bottle, when held at the conveyor opening, will show which way the air is traveling. If the smoke travels straight up or slowly toward the spray booth, the air supply is properly balanced with the air exhaust. If the smoke travels away from the booth it is advisable to regulate the dampers of the air supply.—W. BEACHAM.

Mixing Equipment Appoints Two Representatives

Two new field representatives have been appointed by Mixing Equipment Co., Inc., of Rochester, N.Y. They are: Johnson Roney II of Clearwater, Fla., and Industrial Sales & Engineering Co. of Buffalo, N.Y.

Mr. Roney has served as an engineer for over 30 years in the proper application of industrial equipment.

Industrial Sales and Engineering is headed by Roy A. Bass, who holds an M. E. degree from Cornell. He was employed in the engineering and sales departments of a manufacturer of shell and tube heat transfer equipment. Junior member of the firm is Kenneth C. Bass, who is a graduate Mechanical Engineer from the University of Kentucky. He was employed by two or three large concerns, in engineering, process operations and product design capacities before he joined the Navy during the war.

Classified Advertising

Rate: $1.00 per line per insertion—minimum $5.00

WANTED TO BUY.

Interested in buying some infra-red paint baking equipment; also, some steel benches and tables. FAIR-PLAY MFG. CO., 73 Rogers Road, Des Moines 15, Iowa.

FOR SALE.

Complete equipment to run small production paint shop, including Zig Zag conveyor, 2-stage washer, paint dip tanks, processing dip tanks, infra-red oven, water-wash spray booth, guns, and other accessories. All equipment in excellent condition. Complete list upon request. Products Finishing, Inc., 6564 Benson St., Detroit 7, Michigan.

FOR SALE

97 Fostoria Infra-Red Sections.
Three tank Bonderizing systems. Tanks 128½ x 54 x 48½-in. Priced for Quick sale. JORDAN REFRIGERATOR CO., 58th & Grays Ave., Philadelphia 43, Penna. Phone: BE 6-4510.

LIQUIDATION SALE

Ultra modern lacquer and finishing equipment including gas and electric ovens, automatic and manual spray booths, conveyor systems, and all accessories. Blakeslee 36" x 40' gas fired, 3 stage belt type chain carrier degreaser, $5,000 (cost $13,000), Mahon gas fired oven 106' long x 13' with 500' Link Belt monorail conveyor and 13' water wash booth $4,000 (cost $25,000). Maehler oven with 300' Link Belt conveyor and 8-4' x 4' x4' De Vilbiss water wash booths $12,500 (cost $50,000), Paasche automatic water wash booth 4' x 5' with 87' chain conveyor and 33' gas fired baking tunnel $3,500.00 (cost $16,760), and Gardner-Denver 15, 30, 40, & 50 H. P. air compressors. $50,000 cost value stock of lacquers and enamels including 2000 gals. black wrinkle (Carlsen, Zapon, & others), 600 gal. ivory enamel (Nubian). Write for complete price list of equipment and finishing materials for sale at rock bottom prices. DE FOE FINISHING CO., 1750 N. KIMBALL AVE., CHICAGO, ILL., ALbany 2-0801.

FORD CUPS

THE VOL-U-METER COMPANY
Buffalo 16, New York

HELP WANTED

SALESMAN WANTED

Industrial paint salesman, excellent opportunity. Interest in business can be obtained by right man. Plant in Ohio. Our personnel know of this ad. Address IF-642, care Industrial Finishing.

SALESMAN WANTED

Industrial lacquers and synthetics. Must be experienced and have good following. Can guarantee excellent materials at competitive prices. Well organized laboratory and plant to back up our products. Car essential. Write in full detail. Address IF-644, care Industrial Finishing.

SALES REPRESENTATIVES WANTED

For New York City area and also state of Connecticut, with following, to handle our industrial lacquers and synthetic enamels on commission basis. Address IF-646, care Industrial Finishing.

FOREMAN WANTED

Small independent lacquer and varnish manufacturer located in New York City area. Permanent job for thoroughly experienced man. Excellent opportunity for right man. Must understand roller mill operation, color-matching, etc. Give complete details. Address IF-647, care Industrial Finishing.

SALES REPRESENTATIVE WANTED

One of the oldest and best known Industrial Oven manufacturers requires a sales representative for upper New York State including Rochester, Syracuse, Buffalo. Also Erie, Pa. Experience with industrial ovens or similar products highly desirable. Good contacts essential. Excellent opportunity with full cooperation assured. Commission basis. Our organization knows of this advertisement. Address IF-648, care Industrial Finishing.

ENAMEL CHEMIST WANTED

Enamel Chemist Formulator. Growing, centrally located industrial paint manufacturer desires an enamel chemist formulator. State educational background, experience and salary desired. Address IF-649, care Industrial Finishing.